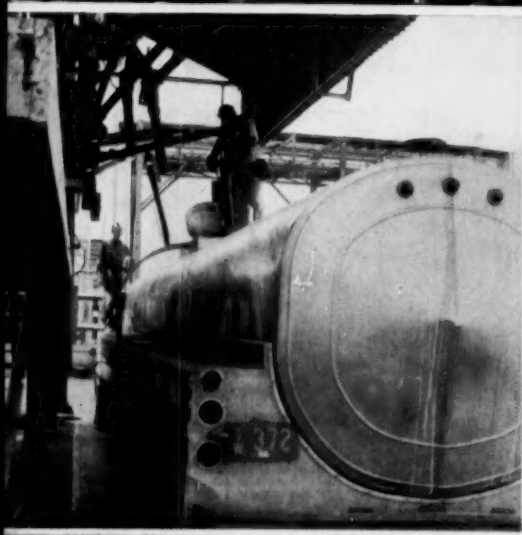


Chemical Week

October 15, 1955

Price 35 cents



If stockholders agree—and it's likely—Reichhold and Catalin will merge p. 13

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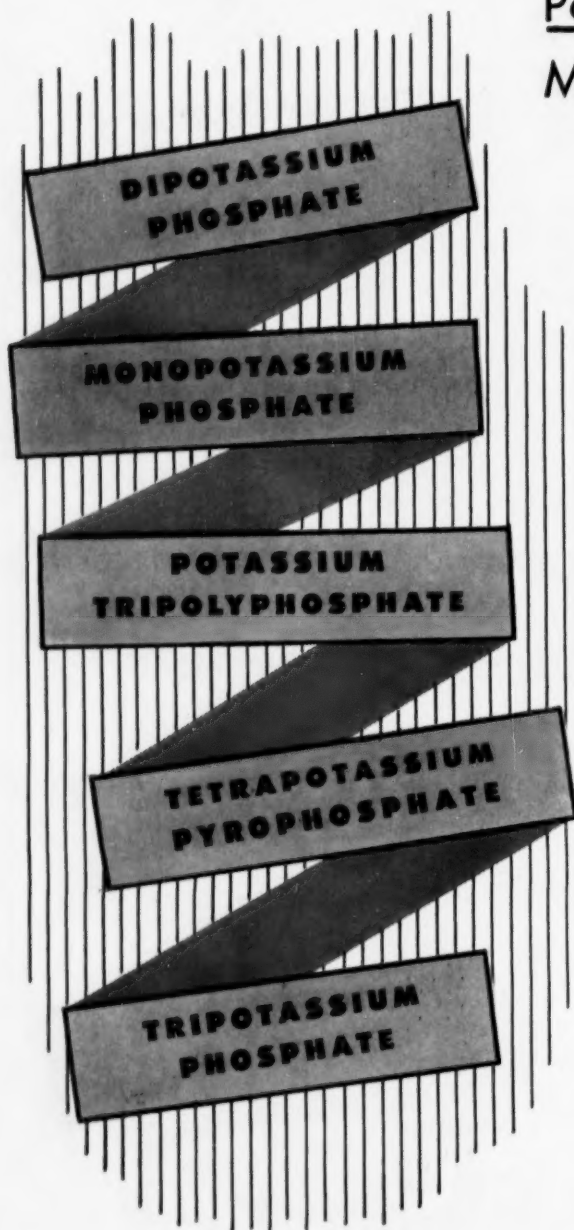
Put research men into the plant and you get a better product, says Pfizer p. 60

Division A's research discovery may solve Division B's problem, but it takes liaison p. 77

► **Dockside to truck at minimum cost; here's how Celanese eases East Coast distribution . . p. 102**

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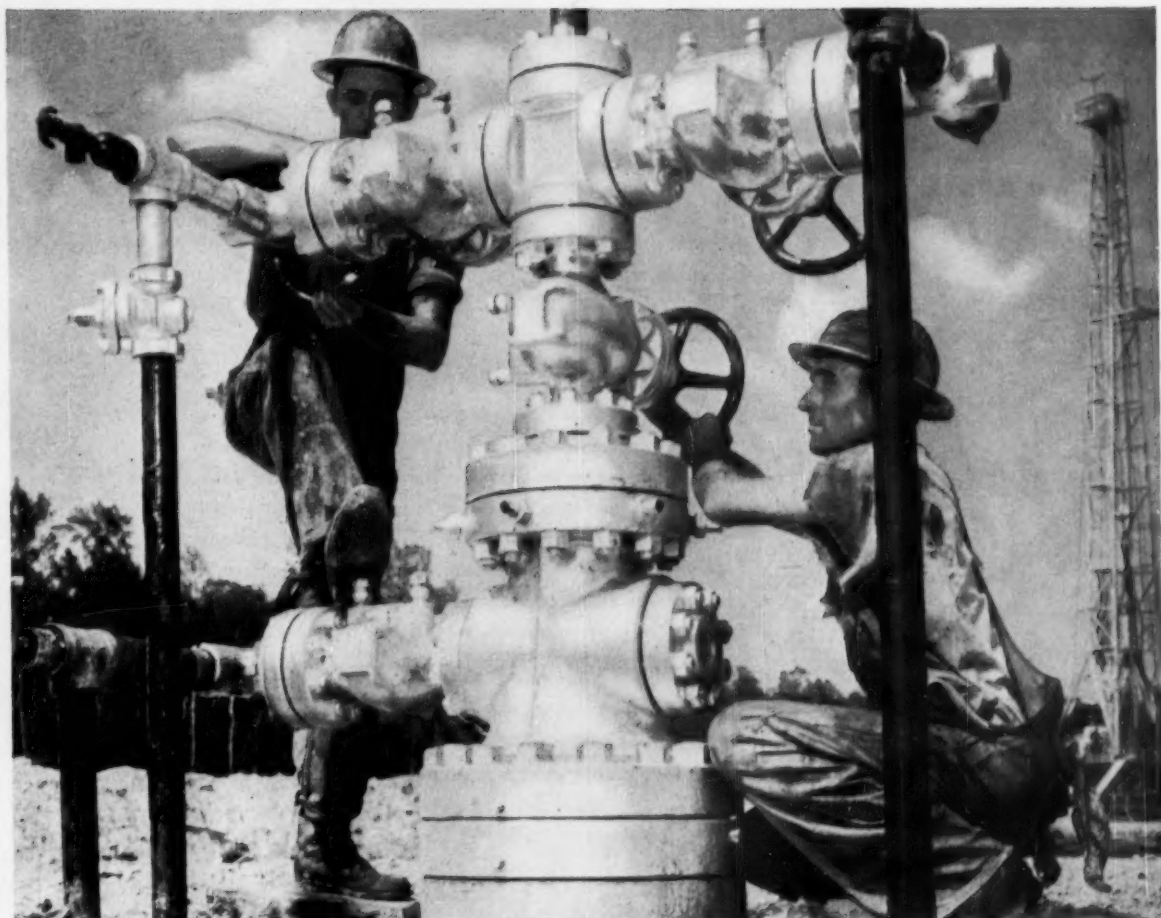
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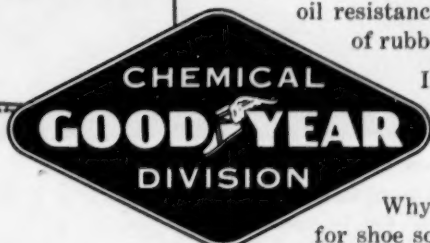
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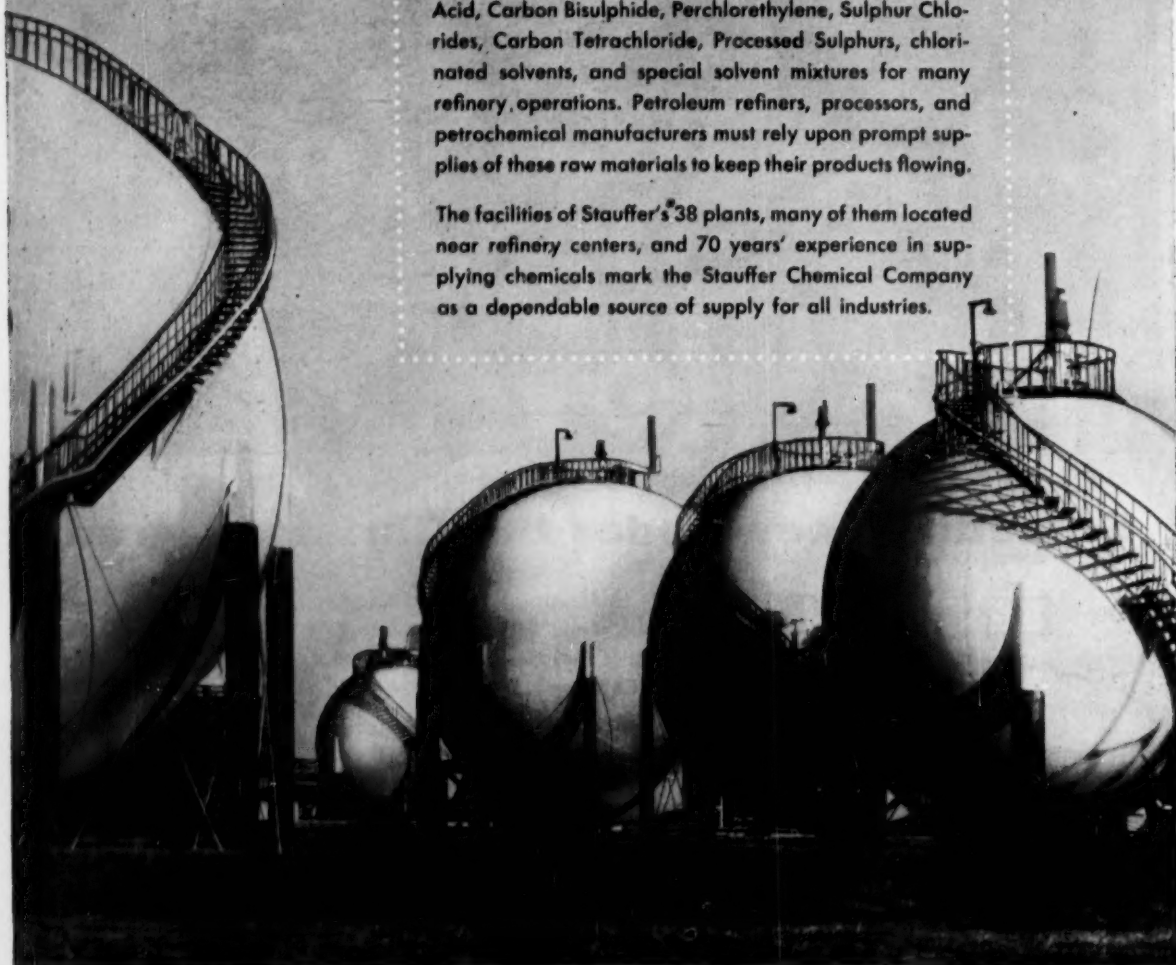
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STAUFFER  **CHEMICALS**

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OPINION

Touch-Up Patents

TO THE EDITOR: In your discussion of touch-up paint products ("Selling a Touch of Paint," Sept. 10, p. 66) you referred to our Scratch-Master fountain brush applicator and said "It is so similar [to the Tipon applicator] that Tipon is suing for infringement of its patent." This is not a fact. Our customers, reading your article, must logically deduce that we are infringing on patent rights claimed by Tipon and will be influenced accordingly.

Actually, the patents on Tipon's flow-brush dispenser referred to in your article are directed to the gravity-actuated weighted brush and do not cover any product made by us.

As the nozzle end of the Tipon applicator is turned downward, the weighted brush falls into projected position, and when the nozzle end is turned upward, the weighted brush falls back into the container.

To the contrary, our "Scratch-Master" applicator is spring-actuated, and when the cap is removed, the brush automatically springs into action, ready for use. This permits use of the brush when the applicator is held in any position—up, down or sideways. We consider this to be an original development of our company, which has been in the touch-up business for over 15 years.

Your readers and our customers are entitled to know that there is no infringement suit as reported . . .

S. E. EDELSTONE
President
Dupli-Color Products Co., Inc.
Chicago

TO THE EDITOR: I am particularly concerned about the statements in your news article on touch-up applicators, which say in effect that Tipon is suing Dupli-Color for infringement of its patent.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
W. A. Jordan, Chemical Week, 330
W. 42nd St., New York 36, N.Y.

This is fallacious . . . There is, however, in the U.S. Patent Office an interference proceeding involving patent applications in which Tipon and Dupli-Color are interested . . . we would appreciate your apprising your readers of the true state of this particular situation . . .

NATHANIEL C. SCHEPPE
President
Tipon Corp.
New York, N.Y.

Sorry. Omission of the word "interference" and use of the word "suit" distorted the meaning. Technically, as is often the case, there may be interference problems surrounding patents (e.g., which is prior), which are resolved by the Patent Office. They are not, however, "suits."—Ed.

Range of Sweeteners

TO THE EDITOR: Your informative news article on sweeteners (Aug. 20) may be misleading to some readers in one respect. It seems to imply that only a 10:1 ratio of cyclamate to saccharin has patent protection. Actually, patents issued and pending give us control of a broad range of cyclamate-saccharin ratios . . .

ELMER B. VLIET
Vice-President and
Scientific Administrator
Abbott Laboratories
North Chicago, Ill.

CW mentioned the one ratio only because it is the most widely used. It should not be inferred, however, as Reader Vliet says, that this denotes the breadth of the patents.—Ed.

Unseen Losses

TO THE EDITOR: . . . For a good many years I have encouraged young men to study chemistry or chemical engineering . . . and I have given considerable aid to a good number of youngsters. And I am glad I did so; I know of very few young chemists who are unemployed or dissatisfied with their employment.

But I believe that the employment practices that many companies are now following is going to prove harmful to them and, perhaps, to the chemical industry. The age barrier set by many companies—and it is as low as

35 or 40 years of age—has kept many experienced men from being employed.

I, for example, am 52 years old. I have been unemployed for two years. My attempts to obtain a position before I became a member of the Forty Plus of Philadelphia, Inc., were fruitless. Since last May (when I was accepted as a member) I have made a number of contacts . . . Some were willing to go above 45 years of age . . . one above 50. One man whom I talked with—and who was interested in the type of experience I have—thought I was suitable for the position he had in mind . . . until my age was mentioned . . . Then the conversation tapered off . . .

As a result of this rather general condition, I have noticed that a number of chemical men have had to seek employment in other fields . . . (Personally, I am still hopeful of going into active laboratory, plant or research work) . . .

And several of my friends who were considering sending their sons to college to study chemical engineering . . . have now decided to educate them in trades (to become plumbers or electricians) . . . They feel that unions will protect their jobs when they are 40 and over . . .

That, it seems to me, well may be unfortunate . . .

NAME WITHHELD

DATES AHEAD . . .

American Gas Assn., annual convention, Los Angeles, Oct. 17-19.

National Safety Council, exposition Conrad-Hilton Hotel, Chicago, Oct. 17-21.

American Dietetic Assn., annual meeting, St. Louis, Oct. 18-20.

National Assn. of Corrosion Engineers, South Central regional meeting, Shamrock-Hilton Hotel, Houston, Oct. 18-21.

Atomic Energy Exposition, United Nations Plaza, New York, Oct. 20—Nov. 3.

International Congress of Industrial Chemistry, Madrid, Spain, Oct. 22-31.

National Conference on Standards, Sheraton-Park Hotel, Washington, D.C., Oct. 24-26.



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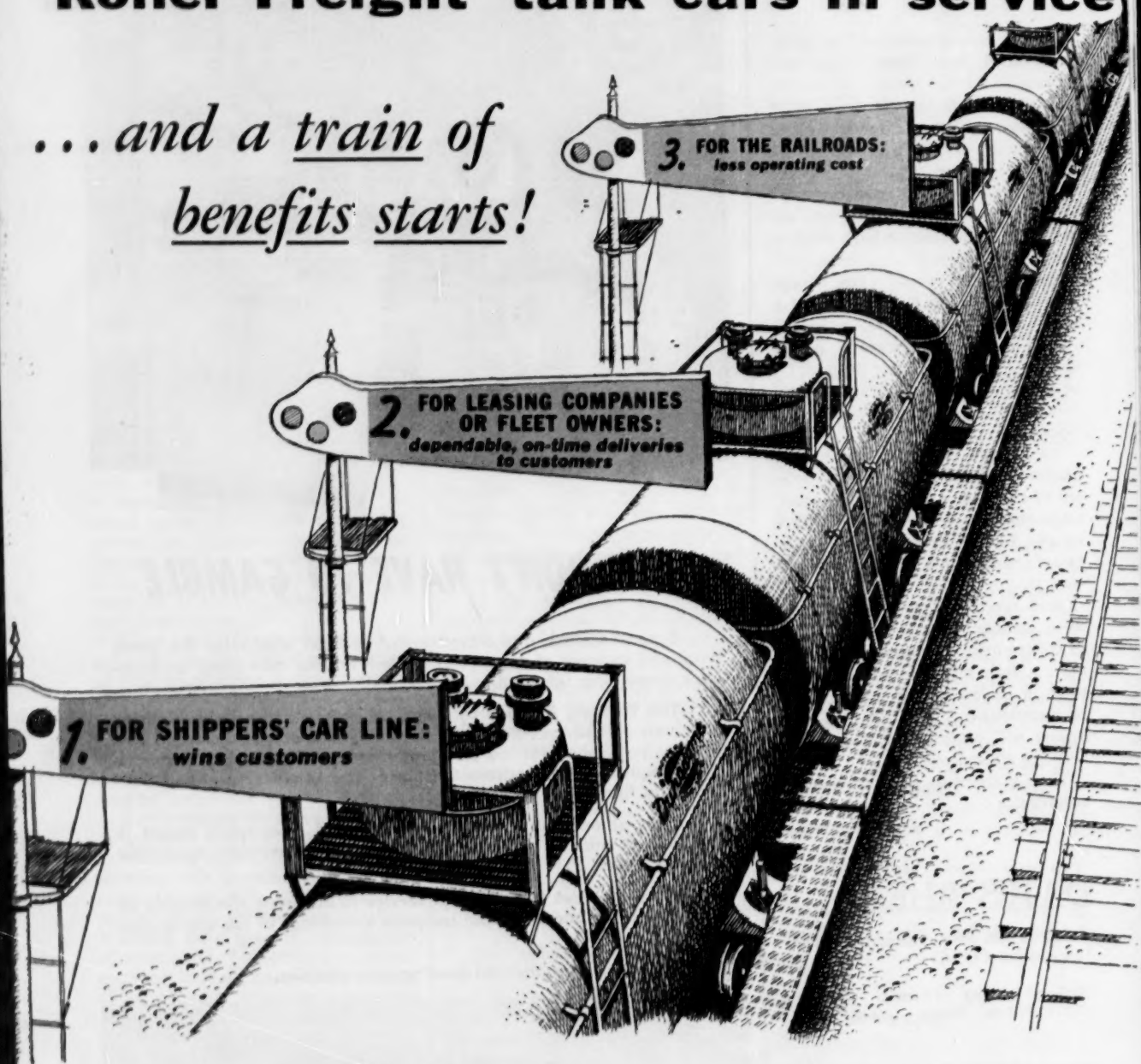
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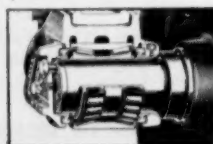
Because tank cars often are used for storing commodities as well as transporting them, they may stand as long as three months on a siding. With friction-bearing-equipped cars, the oil film between axles and "brasses" disappears during these long waiting periods and moisture in the journal box corrodes the journals. As a result, when the car goes back into service, the axle is apt to be cut and become overheated, and a hot box results.

Timken tapered roller bearings on Shippers' Car Line's 10 new cars eliminate the hot box problem because their lubrication can't fail. "Roller Freight" cars provide greater availability, are always ready to roll no matter how long they've been idle. Thus, a train of benefits results all along the line. Shippers' Car Line gains a big talking point in the lease or sale of cars because of advantages to its customers. These customers can, in turn, provide their customers with dependable, on-time deliveries. And the railroads benefit because Timken bearings eliminate the hot

box problem, cut terminal bearing inspection time 90%, reduce cost of lubricant as much as 89%. Result: train delays are greatly reduced.

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TAPERED ROLLER BEARINGS



Business

Newsletter

CHEMICAL WEEK

OCT. 15, 1955

Booming business—Both in the U.S. and abroad—was not to be denied last week—the second full work week after President Eisenhower's heart attack sent stock prices reeling.

A score of major chemical-producing firms hopped on the expansion bandwagon—braking effectively the economic shock of the President's illness. Others were holding up official release of plans, pending completion of financing arrangements.

Aluminium, Ltd., large Canadian aluminum producer, will virtually double its alumina capacity in Jamaica, B.W.I., at a cost of \$17 million. When completed (in mid-1957), the expansion will give Alumina Jamaica, Ltd., a total output of 543,000 tons of alumina annually.

Kaiser Aluminum and Chemical Corp. will start work early next year on a \$3-million expansion of its Chalmette, La., plant. Part of the company's \$90-million expansion program, initial work calls for construction of a cryolite recovery plant and billet casting facilities.

Anaconda Aluminum Co., claiming a new process of producing aluminum from Pacific Northwest clays, will build a pilot plant somewhere in the vicinity of Spokane, Wash., to test its process.

Du Pont will sink \$2 million into expansion of vinyl acetate production units at Niagara Falls, N. Y. Made necessary by increased polyvinyl alcohol capacity (scheduled for completion early in 1956), the current project is only one of many expansions currently under discussion in Wilmington.

Cabot Carbon of Canada, Ltd. (Sarnia, Ont.) will increase capacity of oil furnace black from 20 million to 55 million lbs/year. Expansion should be completed early in 1956, should suffice to meet total carbon black requirements of the entire Canadian rubber manufacturing industry.

•
Commerce Dept. investigators have ferreted out a black market in nickel that has Justice Dept. officials hopping in indignation. Cases uncovered involve acquisition of nickel salts and anodes under government priority ratings, then use or resale for nondefense purposes.

Until the whole matter can be ironed out, Commerce will tighten up on nickel priorities, will ask all consumers to justify use of preference ratings by identifying related military contracts.

•
Negotiations are under way in San Francisco this week concerning sale of Crown-Zellerbach's interest in Fiberboard Products, Inc., to Pabco Products, Inc. Currently, both companies have a 50% voting interest in Fiberboard.

•
A 50-million-peso (\$4-million) improvement and expansion program is being mapped out by Celanese Mexicana, S. A. Work won't start until sometime in 1956, but company officials say increased nylon-producing capacity is a big factor in current plans.

Business Newsletter

(Continued)

First synthetic glycerine plant to be built outside the U. S. will be erected at the Pernis Refinery, near Rotterdam, by Bataafsche Petroleum Maatschappij. Cost \$6.6 million; estimated date of production: mid-1957.

Claiming for its partner the giant British chemical firm Imperial Chemical Industries, Sumitomo Chemical Co. (Japan) will launch its long-heralded petrochemical expansion early next year.

Initial products will include ammonia and polyethylene in Niihama City in Ehime prefecture.

Also in Japan: Mitsui Metal Mining Co. will take a second stab at mining sand chrome at Horokanai Village on Hokkaido. Tsuchidani Sand Chrome Co. began mining operations in the area in early 1941, continued on an off-again, on-again basis until earlier this year.

Mitsui's hope is to raise output to a profitable 600 tons (or more) per year, channeling most of its output into export markets.

Watch for a big drive on Latin-American markets by Chas. Pfizer & Co. (Brooklyn). Reports of a flurry of activity by the Brooklyn pharmaceutical firm are circulating from Mexico City to Buenos Aires. Best guess: that the big push will come soon after the first of the year.

When the gun sounded last Saturday, closing the bids on the last of the government-owned synthetic rubber plants (at Institute, W. Va.), six companies had made their tenders official: Goodrich-Gulf Chemicals, Inc.; Goodyear Synthetic Rubber Corp.; Imperial Commodities Corp.; Edwin W. Pauley; Union Carbide and Carbon Corp., United Rubber and Chemical Co. Negotiations start immediately, must be completed by Dec. 21.

Reason behind the delay in fluoridating the water supplies of a number of leading U. S. cities has been simply a lack of chemicals, Water Dept. officials are claiming. Jackson, Mich., was forced to discontinue fluoridation when a shortage of sodium silicofluoride developed; St. Louis is just starting up after postponing fluoridation several months because of an inability to get necessary materials.

Others (including Toledo, O.) are substituting sodium fluoride—but at two or three times as much cost to the taxpayer.

Sherwin-Williams is laying plans for construction of a new barium carbonate plant—probably for the Chicago area.

Answer to a citizen's dream—that's the refinery that Standard Oil Co. of California is promising the residents of Honolulu.

There will be no smog, no pollution, no odors, says Standard—if the Honolulu City Planning Commission will but change its zoning laws to permit construction of the refinery on Sand Island, at the entrance to Honolulu Harbor.

So far—no decision, but active opposition from several civic groups.

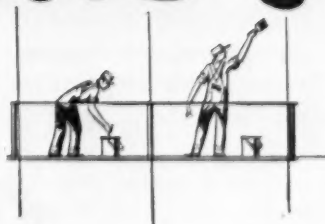
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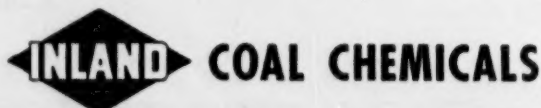
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BUSINESS & INDUSTRY. . . .



REICHHOLD: After 11 months of maneuvering on both sides, the . . .

Marriage Is Imminent

The cards were slapped face up on the table last week for privately held Reichhold Chemicals, Inc., and publicly owned Catalin Corp. of America. And they revealed what the chemical industry has suspected for some time—that merger between the two plastics companies will take place before this year is out.

Offspring of the marriage will be a new entity on the chemical scene, —Reichhold Catalin Chemicals, Inc. All that's needed now to make the proposed merger a *fait accompli*: stockholder approval of a stock transfer—three shares of Catalin common (earning 37¢/share the first 8 months of 1955) for one of Reichhold's (bringing \$1.24/share).

That approval is virtually assured, however, especially since a healthy majority of Catalin stock is held by Henry Reichhold and Harry Krehbiel. (Their combined stock holdings placed in a voting trust would constitute a majority block.)

Benefits Mutual: Commenting on the imminent merger, Krehbiel says,

"Each firm would realize certain benefits by consolidating. Together they'll have potentially greater sales volume and production facilities not enjoyed separately."

Actually, both firms are probably among the last of the plastics makers of medium size still entirely independent. Merged, they would gain a competitive jump on the rest of the field.

How big will consolidation make the new RCCI? Answer: Reichhold sales for the first 3 months of this year totaled \$35.1 million (excluding foreign affiliate sales). Catalin's sales reached about \$12.7 million. Net before taxes: \$2.3 million and \$0.73 million, respectively; net income after taxes: \$1.3 million and \$0.37 million.

Just the Beginning: According to Henry Reichhold, "This merger is simply the start of a new era of growth for Reichhold." With easier access to funds (via public financing), the company can look forward to expansion of plastics research, construction of new plants, further diversification.

In fact, Reichhold has already gone on record that his firm is contemplating merger with as many as four or five other medium-size chemical firms. In this way, he feels, the company's base can be broadened most effectively.

Coalition of Reichhold and Catalin will mean immediately that Reichhold can supply Catalin with phenol and formaldehyde, basic materials for plastics production. Together they intend to continue to produce and sell coating resins, plastics raw materials, oil additives, polystyrene molding powders, and other chemical raw materials.

Likely management line-up in the new corporate structure: Henry Reichhold as board chairman; Harry Krehbiel as president.

East Joins West

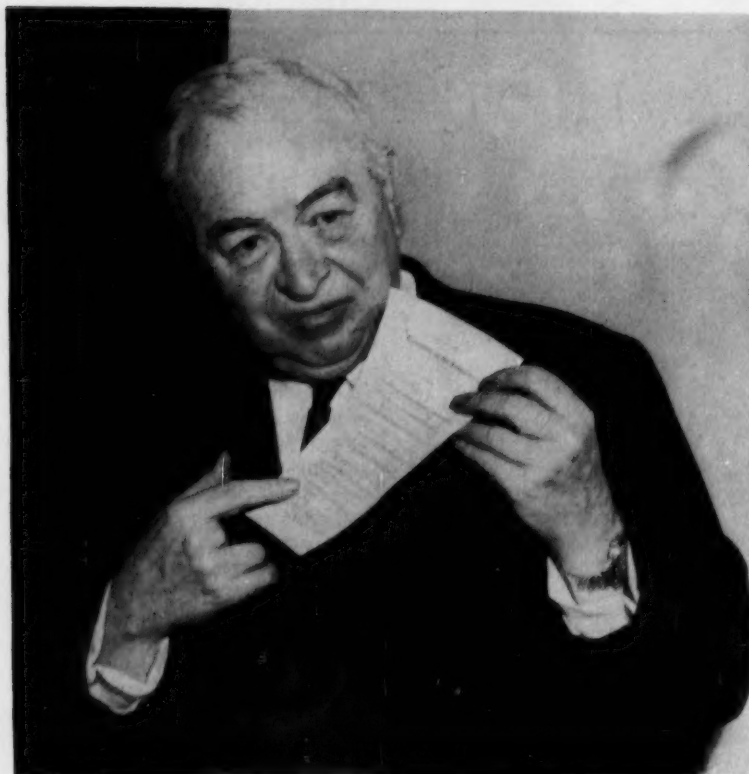
Amalgamation of the pesticides operations of Canadian Industries Ltd. and Chipman Chemicals Ltd.—largest manufacturers of pesticides in eastern and western Canada—will take place before the end of the year.

According to present plans: 50% of the shares of a joint company (to be known as Chipman Ltd.) will be held by CIL, 50% by Chipman.

Head office of the new firm will be in Montreal; the company will get control of four manufacturing plants—in Buckingham, Que.; Hamilton, Ont.; Winnipeg, Man., and Moose Jaw, Sask.

Obvious Gains: Gains to both companies will be far-reaching. Chipman will henceforth have the extensive research resources of Imperial Chemical Industries behind its pesticide operations; ICI picks up a number of sales and technical services offices—scattered at centers across western Canada and the U.S.

The amalgamation, however, will be kept strictly to pesticides. CIL's Agricultural Division will continue to maintain its other operations, such as the manufacture and sale of superphosphate and compound fertilizers. And Chipman will hold to its current setup of corporate management.



KILGORE: On issue assailed before his committee, drug-buying group is . . .

Disbanding Under Fire

In an action that may settle a question that long has dogged commercial buyers and sellers, more than 100 wholesale druggists throughout the country this week face charges by the Federal Trade Commission of violating the 1936 Robinson-Patman Act on pricing practices.

Under attack is a plan by which the commission says those wholesalers receive illegal brokerage commission on their purchases of drugs and sundries from their suppliers.

According to FTC's complaint, the wholesale druggists are sole stockholders of a corporation—Druggists' Supply Corp., New York—that acts as purchasing agent for them. FTC's primary target is the arrangement whereby Druggists' Supply passes on to its owner companies the commissions it receives for placing orders with their suppliers.

Buyers' Fees Taboo: Under the Robinson-Patman Act, brokerage fees may be paid only for services actually performed; and then—as interpreted

by FTC and the courts—only when the payments do not go to the buyer or an agent under his control. Thus, a seller may pay a broker for finding customers, or a buyer may pay a broker for purchasing services; but a seller must not give the buyer any brokerage fees, even when the buyer actually performs his own brokerage services.

This interpretation of the law has been under attack, most recently during hearings concluded a few weeks ago by a Senate committee headed by Harley Kilgore (D., W. Va.). FTC apparently is now going to take another crack at the issue.

FTC's complaint charges that from 1949 to 1954, Druggists' Supply received nearly \$3 million as brokerage fees from some 300 suppliers, based on percentages of sales made to the owner firms; and that after deducting its own expenses as broker, Druggists' Supply would distribute the rest to its stockholders, according to individual purchases. From 1950 to '54, the

commission says, more than \$700,000 was thus turned over to the wholesalers.

A spokesman for Druggists' Supply avers that the corporation believes it has lived up to the law in all respects. He also notes that FTC's initial hearing on this charge—set for Dec. 6 in New York—will be just a few weeks before scheduled dissolution of the corporation. Its members intend to turn over most of Druggists' Supply Corp.'s chores to a new nonprofit membership organization that has not yet been established.

In Pursuit of Perfection

Another hard-boiled plant inspection program is shaping up for chemical process firms in Philadelphia.

That city—which recently launched a fire prevention checkup campaign that quickly brought shutdown orders for 15 chemical process plants there (*CW*, July 9, p. 39)—has now put up the money for an intensified "neighborhood-by-neighborhood, industry-by-industry" search for sources of air pollution.

In the not-too-distant future, warns Mayor Joseph Clark, Jr., certain chronic offenders in this field will have to close their plants and move elsewhere if there's no other way to restore pure air to some of the worst-affected neighborhoods.

Total Triumph Sought: Clark credits "many public-spirited firms" with having cooperated in this drive voluntarily, investing "millions of dollars in modern devices to eliminate air pollution." But still the present situation leaves much to be desired, he maintains. "We have only scratched the surface in our attack on pollution resulting from oil and gas combustion," he goes on. "Odor control is in its infancy."

The goal to be pursued by the city's Air Pollution Control Board appears to lie not very far this side of perfection. Mayor Clark says the aim is to "eliminate—so far as practical—all air pollution." His plan calls for reinforcing the board's enforcement staff—which he considers "much too small"—to make the rapid progress sought—and for continuation of the emergency "night watch," which Clark feels has helped cut pollution after sunset.

Besides hiking pollution control funds by nearly 25%, the city is stopping open-dump refuse burning.

Breaching Three Walls

Exports of chemicals from the U.S. should benefit from a number of compensatory concessions gained in GATT negotiations concluded last week with Peru, South Africa and Turkey.

The tariff adjustments stem from a clause in the General Agreement on Tariffs and Trade, which permits renegotiation of previously made tariff concessions in cases where compensation is called for in return for recently withdrawn or modified duties in any of the 34 nations subscribing to the multilateral trade pact.

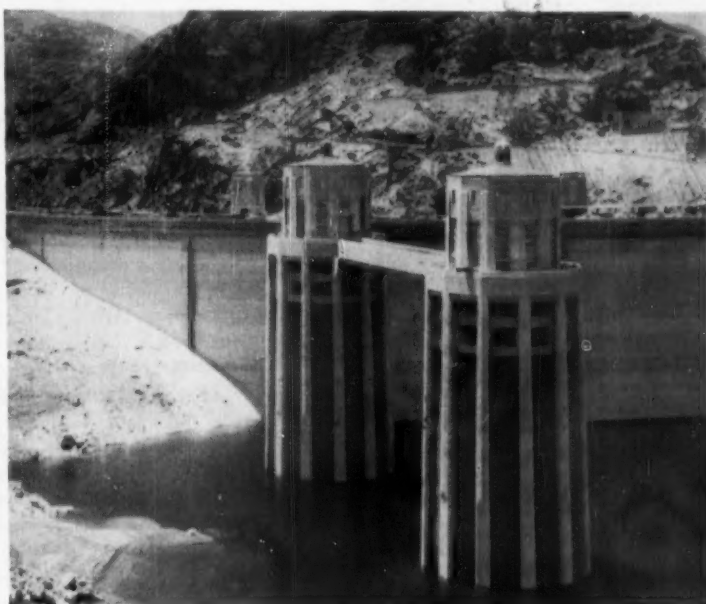
State Dept. spokesmen refuse to comment, however, on whether the current concessions will pattern future cuts, say only that similar negotiations are currently being finalized with 10 other countries—including France, India, the Netherlands, Pakistan, Sweden and Finland.

Some Up, Some Down: Under terms of the agreement with Peru, U.S. producers will profit (under "the most-favored-nation treatment") on sodium chromate and bichromate, carbon tetrachloride, acetone, sulfamides and derivatives, aspirin, DDT, activated carbons, antifreezes, cleaning preparations and other chemical preparations used on automobiles, fertilizing preparations with a basis of bacteria or vegetable hormones, auxiliary paint products, sodium and potassium xanthates, penicillin and related antibiotics, synthetic fruit flavoring, soap powder used in dental creams, ammonium carbonate, aluminum sulfate, tetraethyl lead and other antiknock compounds, and ultramarine blue.

At the same time, however, Peru will withdraw concessions on sodium hydroxide, sodium bicarbonate, sodium carbonate, copper sulfate, water softeners, detergents, and degumming, dampening and softening products.

Generally Looser: South Africa agrees to bind its tariff rates on artificial and synthetic resins and on rayon staple fiber—both commodities that the U.S. has been exporting to South Africa in substantial and growing volume.

Turkey has revised its entire tariff schedule to put tariffs on a by-value basis, affecting a number of chemical rates. But it's impossible at this stage, State Dept. officials claim, to evaluate the impact of Turkish concessions on U.S. chemical exports.



Same Scene, No Comparison

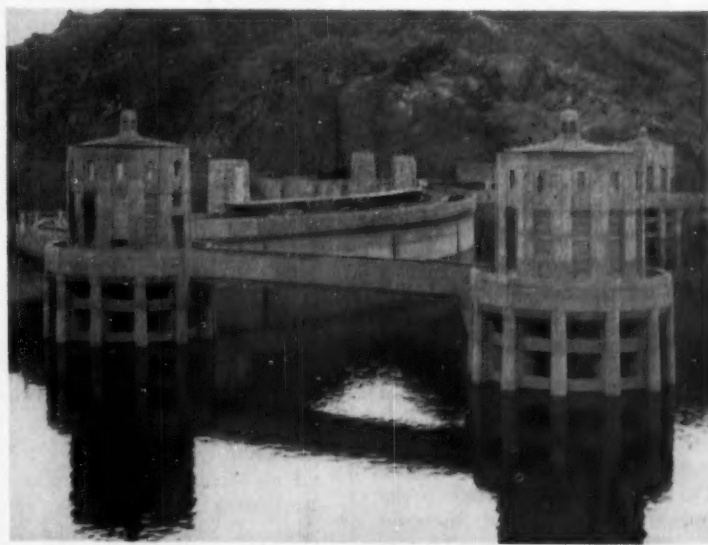
LAKE MEAD—reservoir for Hoover (Boulder) Dam—has reached its high point for 1955 (see top cut)—after one of the lowest runoffs in history.

Allottees of power from the dam met recently in Los Angeles to review the power situation, heard that despite a 33% cut in firm power allotments, southern Nevada

should suffer no severe shortage.

There's a good possibility, however, that companies in the area will get a rate increase. Reason: to make up its deficits, the commission has been forced to buy steam power.

Grumbling chemical executives in the area remember just three years ago when Lake Mead was at its highest (see below).





HILL: In suit brimming with international import, his firm faces . . .

Charge of Restraint

World trade in drug and pharmaceutical products is the subject matter of two newly filed lawsuits that have overtones of current international diplomacy.

Farbenfabriken Bayer, A.G.—one of the successor companies to Germany's hulking I. G. Farben chemical cartel—has brought a pair of suits against Sterling Drug, Inc., alleging conspiracy to restrain trade and breach of contract. Both suits are pending in U.S. District Court at Newark, N.J.

In the "restraint of trade" action, the German concern is asking the court to enjoin Sterling from interfering with Farbenfabriken's efforts to re-enter the pharmaceutical market in the U.S. It's also asking for treble damages for losses assertedly suffered by Farbenfabriken.

Cites 1949 Contract: Specifically, Farbenfabriken says it tried to put its products back on the U.S. market in 1949 through an agreement with Schenley Laboratories, Inc.; but that this move was blocked by Sterling's alleged conspiracy.

The second suit accuses Sterling of having broken several agreements said to have been made between the two companies back in 1920 and 1923.

The 1920 pact, it's stated in the complaint, pledged a joint enterprise between Farbenfabriken and Sterling covering sales of aspirin products in

Latin-American nations. Farbenfabriken's summary of that agreement: for release of its trademarks to Sterling, the German firm was to receive 25% of profits on Latin-American sales for 50 years. The 1923 contract, Farbenfabriken says, provided for Sterling's use of the German company's research data and the "Bayer Cross" trademark; called for Farbenfabriken to stay out of the U.S. market; and gave Sterling exclusive rights to sell Bayer products in Britain, Australia and South Africa. In return, the plaintiff adds, Sterling agreed to a 50-50 split of profits.

Named as coconspirators with Sterling: two subsidiary companies, Winthrop Chemical, and Bayer, Inc.; and several individuals, notably Sterling's chairman and president, James Hill, Jr., and vice-president and director, E. I. McClintock.

So far—since Hill is out of the country—Sterling has declined to comment on the charges.

EXPANSION

Carbon Black: J. M. Huber Corp. will expand carbon black production by 20-30 million lbs./year, according to company spokesmen.

The expansion is scheduled for Borger, Tex., is expected to be in full operation during the latter part of 1956.

Sulfuric Acid: Du Pont will build a new sulfuric acid plant at a recently acquired site in Ohio—about 20 miles downstream (on the Ohio River) from Cincinnati.

To be known as the Fort Hill Works, the new plant will be operated by the company's Grasselli Chemicals Dept., will replace a plant now in operation at Lockland, O.

Ethylene: Monsanto Chemical Co. will expand ethylene-producing facilities at Texas City, Tex., at a cost of several million dollars.

Construction gets under way next



Fellowship with a Flourish

TOP OF THE SEVENTH, it's Yankees, 4 to 2, signals Monte Harrison, an operator at Carbide's gas separation plant at South Charleston, W. Va. Monte ("don't call me Montague") lives in a house overlooking Carbide's sprawling plant at South Charleston, has

a deep and abiding compassion for fellow workers unable (because of safety regulations) to keep up with a play-by-play account of the day's sporting spectacle. Hence, his home-made scoreboard, which scored the biggest hit of the whole series with Carbide employees.

Washington Angles »

» **The feud over industry men in government** will be getting hot again when Representative Celler's antitrust committee reopens hearings Oct. 25. So far, the Commerce Dept. has blocked Celler's efforts to subpoena the files of the Business Advisory Council, Commerce Dept.'s top advisory group. But Celler is still demanding a look at the books, the financing and the influence BAC members have had on policy.

» **Material shortages are again pinching** chemical producers. BDSA's Chemical Division has been issuing about a dozen directives a month to chemical firms doing defense business, to help them get scarce materials. Most critical material is nickel-bearing stainless steel; others include plastic gasketing materials and abrasive compounds.

» **A decision on the Du Pont cellophane case** could come from the Supreme Court by the end of the year. This week, as lawyers for the government and Du Pont argue the case before the high court, Wilmington officials are firmly convinced they'll get a favorable decision such as that rendered in a lower court on Dec. 14, 1953.

Also up for consideration: the Du Pont-General Motors antitrust suit—thrown out of a Chi-

cago court early last December (CW, Dec. 11, p. 13).

Two justices may remove themselves from participation in the decisions: Justice Tom Clark, who was Attorney General when the suit was filed in 1947, and Justice John Marshall Harlan, who acted as defense counsel for Du Pont before appointment to the high court.

» **A tax program for 1956 is shaping up** this week. Industry and trade association groups are preparing a list of excise cuts they'll be lobbying for when Congress returns. Repeal of the 3% tax on freight shipments has the most backing so far. Congress will get started on taxes before the session opens; the Joint Committee on the Economic Report will conduct hearings in December on across-the-board studies of more than a dozen panels that have been working during the summer and fall.

» **Administration water policy** recommendations on which a number of chemical expansion plans are admittedly hanging) may be delayed by President Eisenhower's illness. A report, in the making for a year, has been submitted to the White House by Chairman McKay. When adopted and sent to Congress, it will fix Administration line on water development, pollution control subsidies, allocations of costs. But the report is far down on the President's list of matters-to-be-handled while he's recuperating from his recent heart attack.

March; the new units are expected to be in operation by the first quarter of 1957; and with this additional capacity, Texas City ethylene output should be increased 150%.

• **Carbon Tetrachloride:** Stauffer Chemical Co. plans to build a multi-million-dollar petrochemical plant at Louisville, Ky., to produce carbon tetrachloride, chloroform, methylene chloride, and anhydrous hydrogen chloride.

The new plant will be located adjacent to Stauffer's existing Louisville plant, will be ready for operation early in 1957.

• **Sodium Chlorate:** Vancouver, British Columbia, is rapidly gaining stature as a chemical-producing center. Just last week, Electric Reduction Co. of Canada revealed that it will build a \$6 million plant to produce sodium chlorate on the north shore of Burrard Inlet, not far from where Hooker Electrochemical Co. has already started work on an \$11-million chlorine-caustic plant.

D. E. Jones, president of Electric

Reduction, says his firm's move is part of a \$20-million expansion program planned to produce chemicals for Canada's booming pulp and paper industry.

COMPANIES. . . .

• **First Boston Corp.** is heading an investment banking group that last week publicly offered (as a secondary distribution) 200,000 common shares of Aluminum Co. of America.

The group is selling the stock for the account of Arthur Davis, Alcoa board chairman, who will continue to hold about 7% of the company's stock.

• **Crown-Zellerbach Corp.** (San Francisco) has purchased 42 acres of land in San Leandro, Calif., from Parr-Richmond Industrial Corp.

No decision has yet been reached, according to Crown-Zellerbach officials, on either use or time schedule for developing the property.

• **Olin Mathieson Chemical Corp.** has purchased the Mississippi Aluminum Corp. plant at Gulfport, Miss., and

plans an immediate expansion program.

The plant was built in 1953 as part of Mississippi's "balance agriculture with industry" campaign.

No change in plant personnel is planned for the immediate future.

A flurry of company incorporations:

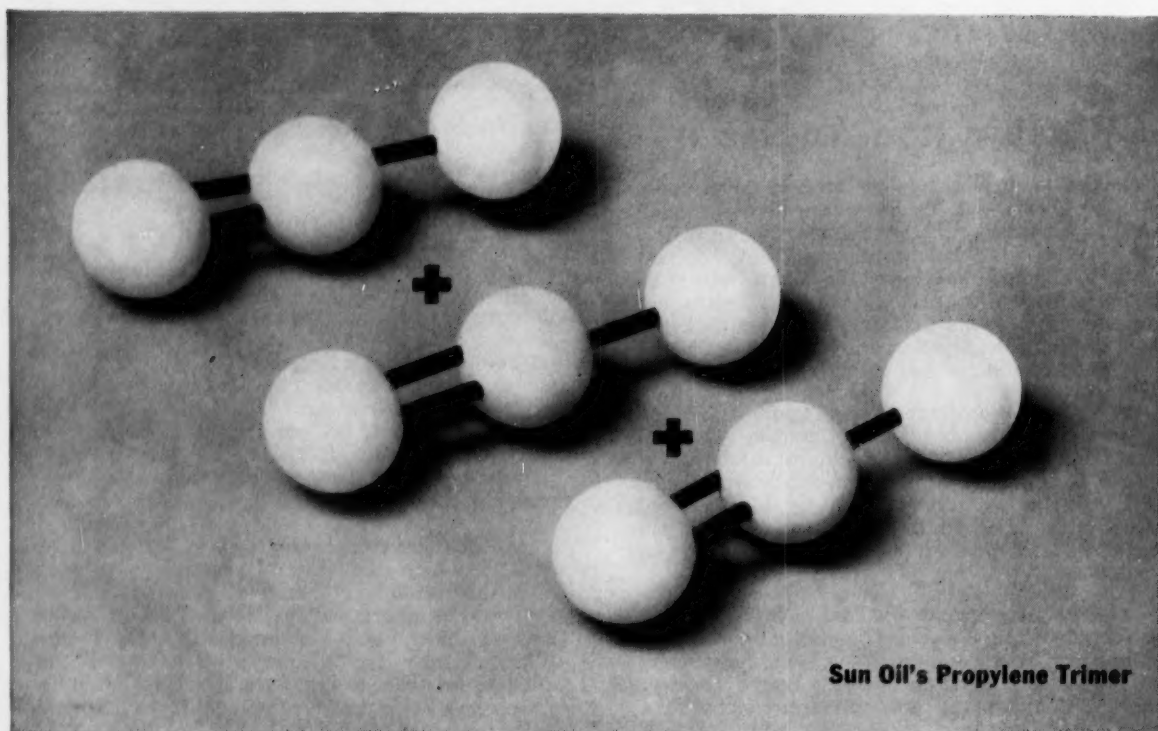
• In Dover, Del.: Delaware Sulphur Corp., with authorized capital stock of \$200,000.

• Also in Dover: Alconda Lithium Corp., with authorized capital stock of \$50,000.

• In Charleston, W. Va.: Braxton Coal & Chemical Co., with authorized capital stock of \$100,000.

• **Haveg Industries, Inc.** (formerly Continental Diamond Fibre Co.) has adopted a plan of partial liquidation to allow for distribution (this week) of 405,000 shares of Budd Co. stock.

Each holder of 100 shares of Haveg common will receive 25 shares of the new Haveg common and 90 shares of Budd common. The transfer arrangement follows purchase of Continental stock by Budd, some months ago.



YOU GET CONSISTENT UNIFORMITY FROM SUN OIL'S PROPYLENE TRIMER

Consistent uniformity of Sun's propylene trimer eliminates color problems in end products...makes it give particularly excellent results in alkylation reaction with aryl groups in the production of synthetic detergents.

Of special interest to chemists in many other fields is the fact that butylenes are eliminated from Sun's propylene trimer. It is almost entirely mono-olefinic...averaging 99.5%. The distribution of the olefin types in propylene trimer is indicated as follows:

Terminal Olefins:

$R-CH=CH_2$	5%
$R_1 > C=CH_2$	12

Non-terminal Olefins:

$R_1 > C=C < \begin{matrix} H \\ R_2 \end{matrix}$ (trans)	16
$R_1 > C=C < \begin{matrix} H \\ R_2 \end{matrix}$ (cis)	5
$R_1 > C=C < \begin{matrix} H \\ R_3 \end{matrix}$	46

Remainder:

16
(Presumably tetra-substituted olefins)

For other information, see your Sun representative,
or write for Technical Bulletin #20. Address
SUN OIL COMPANY, Philadelphia 3, Pa., Dept. CW-10.

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Typical Specifications

API Gravity @ 60 F	57-61
Specific Gravity	0.7351-0.7507
Distillation, 5%	265 F min
95%	275-305 F
Sulfur, wt. %	0.02 max
Bromine Number	135 min
Color, Saybolt	21 min

SUN OIL IS A MAJOR PRODUCER OF:

Benzene • Toluene • Mixed Xylenes • Propylene Trimer
and Tetramer • Sunaptic Acids (High Molecular Weight
Naphthenic Acids) • Sulfonate WS (Water Soluble Sul-
fonate) • PDO-40 (Polymerized Drying Oil)





ABC...and the Reader

BACK IN 1914—forty-one years ago—a group of advertisers, advertising agencies and publishers joined in a project that has come to mean a great deal to the millions who, like you, read business magazines. The project, initiated at a time when circulation claims were rarely verified, was intended to achieve and maintain higher standards of integrity in publishing and advertising practice by providing means to audit paid circulation. Out of that effort came an organization known as the Audit Bureau of Circulations, a voluntary, non-profit, cooperative association, known for short as ABC. Its symbol appears at the head of this page.

We are proud that McGraw-Hill publications were among the founders and charter members of the Audit Bureau of Circulations.

Today the Bureau numbers 3,670 members. These include advertisers, agencies, and publishers of newspapers, farm papers, general magazines and business journals such as this one. These publisher members hold their memberships and their right to display the ABC symbol in their publications only so long as they live up to the circulation standards that are established through the Bureau.

It is one thing to set up high standards; it is another to see that those standards are maintained. This latter and all-important function is performed by a staff of auditors maintained by ABC to check periodically on the circulation practices of the publisher members. When a business magazine, such as this one, joins the Bureau it agrees that the ABC auditors shall have "the right of access to all books and records." Their inspection may dig into the files of original subscription orders, payments from subscribers, paper purchases, postal receipts, arrears of payments, editorial expenses and many other significant items. Sometimes the auditors go behind the records and seek verification of purchase and payment from subscribers themselves.

The information thus obtained and certified by the Bureau then becomes available to the public

and constitutes an authoritative report on the publication's circulation practices.

The advertisers and agencies benefit directly from the ABC because it provides a generally recognized factual yardstick by which the circulations of member publications can be measured and appraised. Every paragraph in an ABC report on a business publication gives the advertisers data that help them make intelligent use of the publication as an advertising medium.

But the ABC renders a service of vital concern to the *reader* as well. The Bureau audits paid circulation only, and it is through this payment, whether by subscription or newsstand purchase, that the reader keeps the editorial policy of a publication responsive to his needs. His decision to buy or not to buy records his judgment on each publication, and the ABC-audited and certified circulation reports make the sum of these judgments known to all concerned.

So the editors of ABC publications must constantly keep their editorial services up to the mark if they are to survive a competition in which the reader's right to buy or not to buy is paramount. Each paid magazine or newspaper will prosper or fail as it wins or loses the voluntary patronage of thousands or millions of readers. And—the ABC is scorekeeper in this vital contest.

Thus the publisher who submits his publication to the supervision and discipline of ABC affirms in the strongest possible manner his recognition that his primary obligation is to his readers and that he owes the standing of his publication to a voluntary demand by those readers.

All this is what makes the ABC brand on a publication so important to its readers. That respected symbol, testifying to the advertising value of the publication, serves also as a constant reminder to all concerned that the reader's willingness to pay for an ABC publication is the basic reason why it stays in business.

McGraw-Hill Publishing Company, Inc.

for your information...

brief summaries of
helpful product news

New, fast way to reline boxcars with reinforced plastics suggests many in-plant uses



In only 2 to 3 hours damaged boxcar lining (left) can be restored for many months of extra duty with a tough, protective coating of reinforced plastics.



Polyester resin, sprayed on lining with ordinary spray equipment. While coating is still wet, fiberglass cloth is applied, followed with another coating of resin.

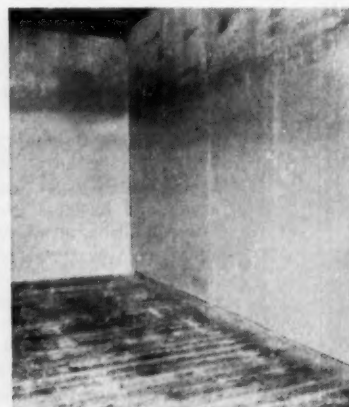
2. Glass cloth is applied to wet, tacky coating.
3. A second coat of polyester resin is applied over cloth and dries to a hard, rigid smooth finish.

Money, manpower savings

Two men can complete the application in about 2 hours. In experimental applications, maximum costs have averaged \$150.00 per car including labor and material... a fraction of the cost of ripping out and installing wood lining.

Suggests many in-plant uses

The use of such rugged, reinforced plastic protective coatings is becoming a standard maintenance practice in many plants. Warehouse stall



Reinforced plastic coating can be cleaned with detergents, disinfectants, steam: can be applied in wide ranges of weather and temperature extremes.

One of the major contributors to the present boxcar shortage is the car that has lining in such poor condition that it must be torn out and replaced. This costly, time-consuming job can knock a car out of service for as many as 70 to 100 hours.

Relining time cut to only 2 to 3 hours

A new method of lining freight car interiors has been developed by an aggressive midwest manufacturer.† The process, employing two mate-

rials—a special polyester resin and a glass reinforcing cloth—has reduced the operation to only 2 to 3 hours, depending on surface to be covered... offers a quick solution to the car shortages experienced by most railroads.

How it's done

Complete or partial relining with reinforced plastics is applied as follows:

1. Using ordinary spray equipment, a basic coating of polyester resin is applied.

partitions and surfaces requiring resistance to moisture or abrasion activity, for example, are easily and economically surfaced in short order.

For more information on this process, check the coupon to the right and mail to Monsanto today.

Monsanto does not make polyester resins, but it does supply the plastics industry with its basic raw materials: phthalic and maleic anhydrides, fumaric and adipic acids, and styrene monomer.

†Name on request.

Pydraul F-9 wins UL listing; 2 new Pydraul grades developed

On May 31, 1955, Pydraul* F-9 became the world's first fire-resistant hydraulic fluid listed by Underwriters' Laboratories. From the Laboratories' Service Card: "The fire hazard of Pydraul is rated 2 to 3 in accordance with Underwriters' Laboratories, Inc.'s Standard of Classification in which ether rates 100, gasoline rates 90-100, alcohol (ethyl) rates 30-40 and paraffin oil rates 10-20."

For lubricity, stability and service life, Pydraul F-9 equals the performance of premium petroleum fluids. The Timken lubricant test shows Pydraul has a film strength of 17,500 psi, while ordinary petroleum-based fluids rate only 5000. The Almen wear tests using Pydraul showed only 2 mg. of metal lost in a 20-minute run. With petroleum oil, metal seized in one minute under the same load. Pydraul F-9 is also re-usable, noncorrosive, stable and economical.

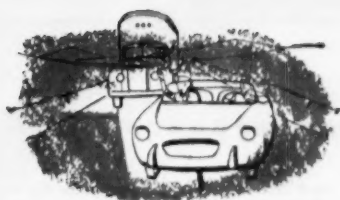
Two new grades of Pydraul are now available:

PYDRAUL 600 is a fire-resistant hydraulic fluid which delivers maximum performance where a high-viscosity fluid is required.

Designed originally for use in die-casting machines and presses, Pydraul 600 has also gained wide acceptance in other applications such as a lubricant for air compressors.

PYDRAUL 150 is designed for use in equipment where a low-viscosity fluid or low-temperature operation is required. Pydraul 150 is commonly used in regulating equipment throughout the steel industry, particularly in out-of-doors installations.

For more information on Pydraul hydraulic fluids, check the coupon.



New Multipurpose Additive Increases Lubricant Efficiency

A true multipurpose additive which sets a new standard of gear lubricant performance has been developed by Monsanto.

Called Santopoid* 44, the additive combines in one product the best performance characteristics of several separate additives which are effective only in limited applications. Lubricants compounded with Santopoid 44 provide complete passenger car hypoid protection under the most severe road test and laboratory conditions . . . not only in the SAE 90 grade but in the SAE 80 grade as well.

Field experience proves Santopoid 44 also gives better heavy-duty truck and bus gear protection without compromising superior high-speed performance. Heavy equipment is protected even when performing the most severe off-highway service.

For information, please mail coupon.

Versatility of Dibutyl Fumarate described in new technical bulletin

A new technical bulletin is now available on versatile dibutyl fumarate. A reactive resin and chemical intermediate, dibutyl fumarate forms copolymers with various monomers under adjusted reaction conditions to produce polymers ranging from brittle resins to soft; internally plasticized materials.

Copolymers of dibutyl fumarate with vinyl acetate, vinyl chloride, acrylates and styrene are used in formulating surface coatings, free films, permanently tacky adhesives, fibers, synthetic lubricants and additive agents for oils. And as a chemical intermediate, it yields substituted succinates readily with the addition of halogens, aldehydes, thiols and similar compounds.

DIDP-E offers big wire coatings benefits

For maximum retention of elongation, tensile strength and modulus properties in wire coatings, specify Monsanto plasticizer DIDP-E (with 0.1% Bis Phenol A antioxidant added). Tests show the compound's electrical properties are equal or superior to DOP. 60° C. T or TW formulations are now available.

*Reg. U. S. Pat. Off.



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WORKS WONDERS FOR YOU

MONSANTO CHEMICAL COMPANY 10/15/55
806 North 12th Street, St. Louis 1, Mo.

Please send:

- ☐ More information about the special surface coating process using polyester resin and glass cloth.
☐ Santopoid 44, Tech. Bul. O-121

- ☐ Pydraul F-9 book
☐ Dibutyl fumarate, Tech. Bul. ODB-54-18

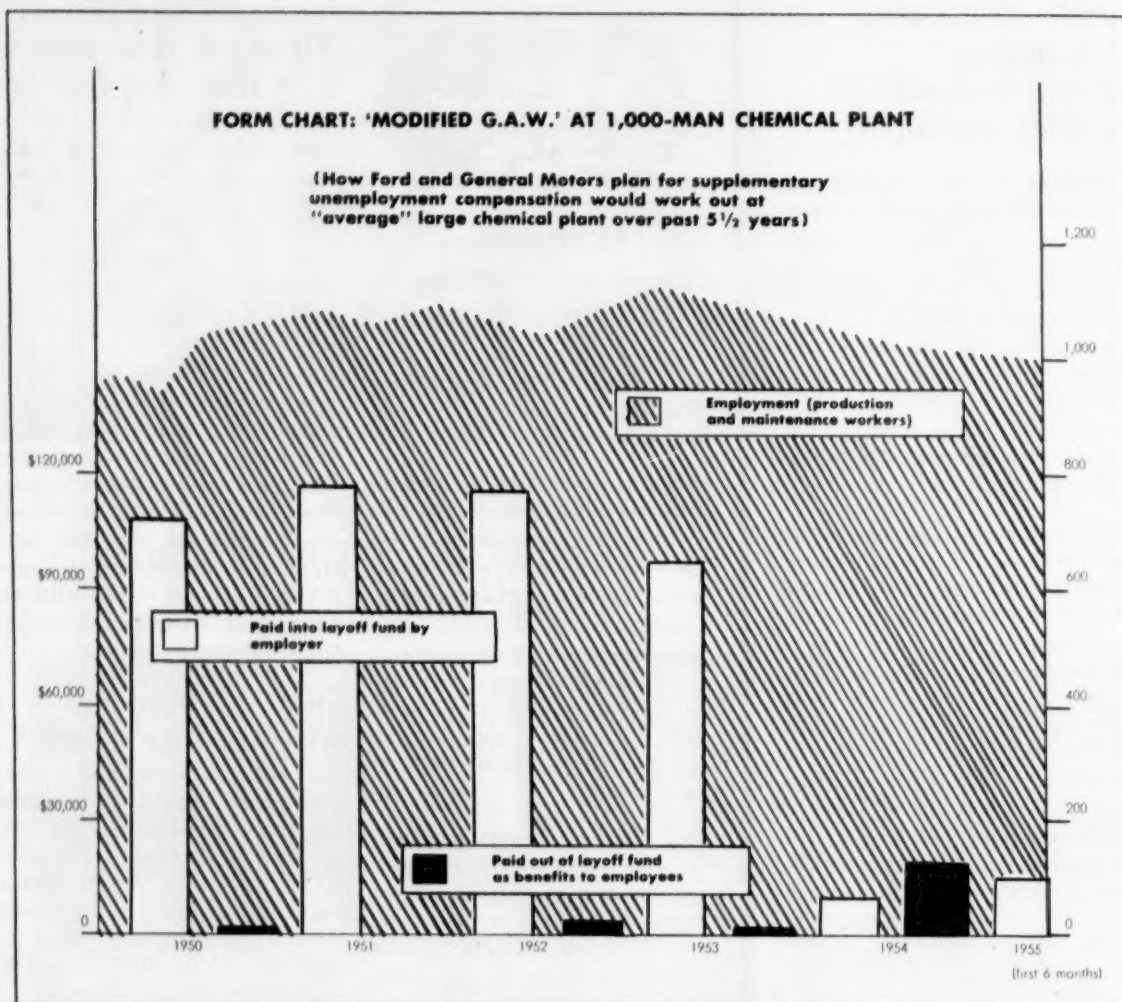
In addition, I would like information about.....

Name..... Title.....

Company.....

Street.....

City..... Zone..... State.....



Cost to Company \$6, Aid to Employee 31¢

That's GAW arithmetic—in monthly per capita averages—on application of the Ford-CIO plan for company-donated layoff pay at a hypothetical chemical plant since 1950.

The conclusion: that steady employment will mute the cry for a guaranteed annual wage—modified or otherwise—in this industry.

"What would it cost us?"

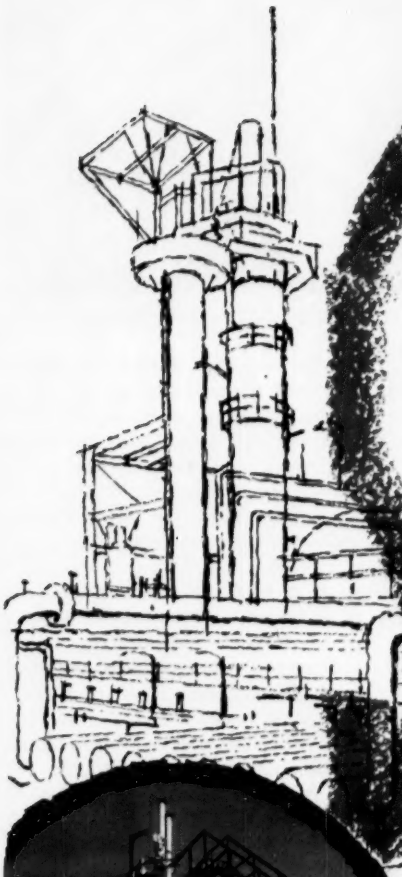
That's the question of the week for chemical management men who've been trying to keep up with developments on the so-called guaranteed annual wage: the signing of "modified GAW" contracts, which now cover more than 800,000 employees in five industries; announcements that various labor unions intend to go after similar contracts next year; and legality of

those agreements under state laws.

Precise answer to the cost-to-the-company question, of course, is even less calculable in advance than long-range sales figures. But if history repeats itself, a quick look at how GAW would have worked out at a chemical plant in the recent, still-remembered past may provide a rough gauge to the plan's prospective costs and benefits through future business cycles.

Not Pressing: It isn't as though GAW were rapping at the chemical industry door now. So far, just five unions—all affiliated with CIO—have signed modified GAW pacts. Principal champion of the scheme is CIO President Walter Reuther, who's also head of the United Auto Workers.

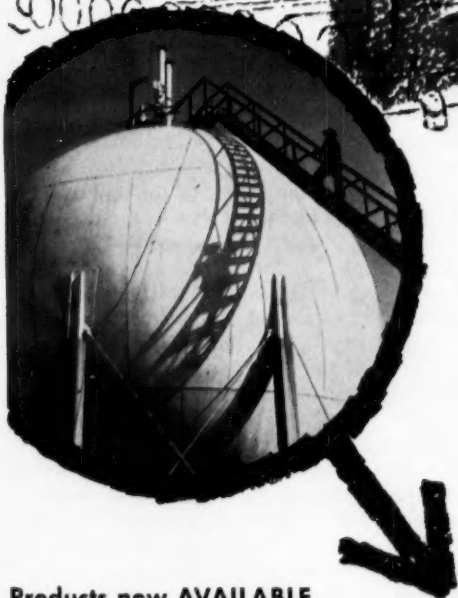
In the chemical field, O. A. (Jack) Knight of the Oil, Chemical & Atomic Workers has suggested that GAW might be a boon for employees in fertilizer and cosmetics plants, where employment has been subject to seasonal fluctuation. President Edward Moffett of the AFL Chemical Workers has had his staff members make a detailed study of existing GAW plans, and this study has been made avail-



A NEW SOURCE
FOR INDUSTRIAL
CHEMICALS

Sohio Chemical Company

LIMA, OHIO



**Now contracting for shipments
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BUSINESS & INDUSTRY



REUTHER, MITCHELL, KNIGHT: Keys to GAW's past, present, future.

able to all ICWU locals.

It's not clear whether the drive for more GAW coverage will gain or lose momentum as a result of the AFL-CIO merger scheduled for this December.

One Hurdle Cleared: In the more industrialized states, people are arguing whether modified GAW plans conflict with state laws on unemployment compensation. At issue: whether a man receiving layoff pay from a company-supported fund is—or should be—eligible for state benefits as well. In some states, certain administrative officials have ruled on this point; but these rulings haven't been tested in court.

One legal hurdle cleared by GAW: the determination by Secretary of Labor James Mitchell to the effect that payments from the company-maintained layoff benefit funds are not "wages" within the meaning of the Fair Labor Standards Act. This makes it definite that employer contributions into those funds won't have to be increased for overtime work.

Two Ups, Two Downs: Application of the Ford-UAW scheme to a hypothetical chemical plant suggests that GAW would require less outlay from chemical companies than from employers in most other industries, and that benefits to workers would be modest indeed. The period chosen—Jan. '50 through June '55—starts out in a recession, goes through the Korean War boom and the 1954 readjustment, and ends up in this year's high level of prosperity.

It was assumed that the plant's "normal" work force was about 1,000 production and maintenance workers, and that actual employment varied from month to month in direct proportion to the total for the entire industry. Also assumed: that the plant

was located in a state whose unemployment compensation rate was \$25/week; that wage scales at this plant were about average; and that newer employees (on lower wage rates) would be first to be laid off in slack periods, last to be recalled as high production was resumed.

The fund would have been built up to a \$400-per-employee level out of employer contributions at the rate of 5¢ per man-hour worked.

Drop in Donations: Each employee laid off would start receiving benefits after one week. For the first four weeks after that, weekly payment from the company-sponsored fund plus the \$25 from the state would equal 65% of the person's weekly straight-time earnings (after taxes); and for the following 22 weeks, 60%.

Under this formula, employer contributions would have halted in February this year after the company had paid into the fund a total of \$458,751—an average of about \$6.55 per man per month over the 5½-year period. Benefits paid out of the fund would have totaled \$21,951 over the entire period, an average of \$115 for each of the 190 layoffs. Twenty-eight persons would have been laid off long enough to use up their entitlement; those people would have received about \$360 apiece from the GAW fund and \$650 apiece from the state. For each of the more than 1,000 employees, total benefits paid out would have averaged 31.3¢/month.

These figures reinforce a feeling—already held by many labor leaders—that GAW is not a "crying need" in most segments of this industry. And with chemical companies continuing to improve their job stability records, the outlook is that demand for GAW in this industry as a whole will be no more than a whisper.

.. and
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Sodium Phosphates
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BERKELEY HEADQUARTERS: Home office of the company that could be . . .

Out of the Woods by Spring

Financially, investment in Salk vaccine has meant a \$2-million drain on Cutter Laboratories; the contaminated-solutions mishap also means a \$4-million loss in sales this year.

But trade sales are now rising; officials insist they'll stick by Salk vaccine until public acceptance is regained.

Out of near-disaster can come the start of an era of new growth. That's the steadfast belief at Cutter Laboratories (Berkeley, Calif.)—the company that this week rounds out its sixth month of recovery after near-catastrophic Salk vaccine venture.

In retrospect, company officials are firmly convinced that there was nothing that they (or any other pharmaceutical company) could have done to prepare to cope with such an emergency—let alone avert it. Even with hindsight, the risk would have been the same, the financial investment just as heavy.

As in the case of all such products, Cutter's initial investment in time, equipment and materials was made strictly in the hope that Salk vaccine would prove the answer to poliomyelitis. The period between Jan. '54, and April 2, '55, was a period of increasing optimism—during which production techniques and controls were presumably perfected, the vaccine proved reliable in mass field tests, and the Francis Report indicated a satisfying demand for the new vaccine.

Then came "Black Wednesday"—the day on which the first case of "induced" polio was reported, and all Cutter vaccine was withdrawn from the market. During the first five

days after the blow fell, the top dozen or so Cutter executives literally lived at the company's Berkeley headquarters. At one time there was a seven-

hour backup of both incoming and outgoing phone calls. The three M.D.s on the staff (including Bob Cutter, now president of the company) handled all incoming messages from the medical profession and health officials that funneled to Berkeley*; nine other top Cutter employees answered calls from the general public; additional help was recruited for the public relations department to handle calls from the press. (Almost immediately, Cutter dispatched Art Beckley, its vice-president in charge of public relations, to Washington for four months to handle the sticky situation with the National Institute of Health and U.S. Public Health Service. Later, Cutter also hired a full-time public relations man to cover the New York area.)

Tie-Up Complete: Meanwhile, the Salk vaccine trouble was proving costly on another score, too. Caught with \$1.25 million of in-process inventory, Cutter had now invested a total of \$2 million in its new product, with practically no positive returns. Moreover, its budget (based on ex-

* Cutter has 10 branch offices in the U. S. and one in Canada, manufactures 350 products, has plants in Berkeley, Calif., and Chattanooga, Tenn.

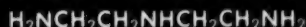


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B & I

pectation of Salk vaccine sales) was all out of line with financial realities. "Financially," states Bob Cutter, "we were in the same shape we would have been in had the Francis Report been unfavorable."

As soon as the initial shock wore off, division managers were ordered to review all expenses with an eye to extensive curtailment. "But at no time," continues Cutter, "did we ever seriously consider abandoning vaccine production." A little cut here, a little cut there was the order; the austerity program "ate into little of the company's muscle, simply pruned away some of the fat that accumulates on any healthy body."

Another financial effect of the Salk program backfire was a reaction on Cutter common stock (which dropped from \$14 to \$8 in the first 24 hours before trading was suspended).

Interestingly enough, however, whereas there were only 965 stockholders before the debacle, there are now more than 1,800. (A major percentage of this increase, Cutter believes, is accounted for by people in the medical and pharmaceutical professions who realize that a drop in market value represented headlines—not basic instability—in Cutter.)

No Carryover: Rather than being adversely affected by "guilt through association," trade sales of other Cutter products are today running ahead of '54 sales.

Nor were there any dips in the trade sales during the crucial (in public relations) months of May and June.

Last year, total sales (including both trade and contract sales) topped \$14.8 million; this year, they should exceed \$10.5 million, with contract sales down an estimated \$4 million. But most of this \$4-million drop will be accounted for by heavy 1954 sales of gamma globulin and dextran for the Civil Defense stockpile—not re-ordered in 1955.

So it's only the loss of expected Salk vaccine sales that is making the shoe pinch at Cutter.

Compensating Factors: Other seemingly unfortunate happenings—for example, the severe press lambasting Cutter took in certain sectors of the country—have boomeranged in the company's favor, too. Its customers (mainly druggists, hospitals, M.D.s and veterinarians) resented what they interpreted as "unfair treatment," re-

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B & I

sponded with increased loyalty*.

Moreover, sympathy has been aroused among private citizens in all areas. Whereas, prior to 1955, Cutter stock was held mainly in Western states, there has been a considerable increase in the number of stockholders from the East in past months.

A more tangible vote of confidence: just last week Cutter obtained a \$3-million long-term loan from Mutual Life Insurance Co. of New York, and American Trust Co. increased its line of credit substantially.

All in the Business: Summing up the company's experience over the past year and a half, President Cutter says it's only a matter of putting events in their right perspective.

Cutter existed for 58 years before the Salk vaccine catastrophe; there's every reason, he says, to suppose that it will be in existence 58 years after details of the vaccine muddle have become blurred in the public memory.

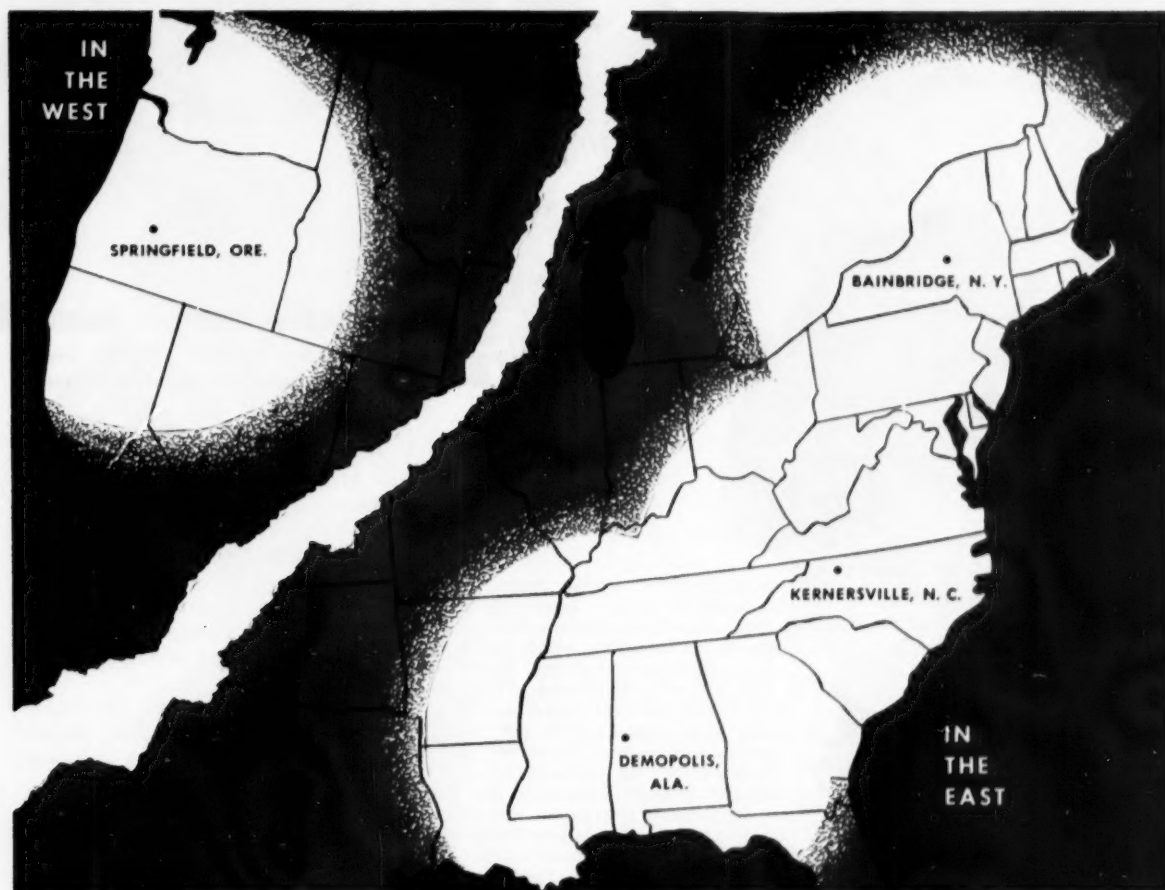
In the interim years, management could face equally vexing problems, will handle them one at a time when they occur. But, says the president, that's a risk management takes. In recreating the climate of acceptability it enjoyed the day after the Francis Report was released, Cutter has a golden opportunity to gain in both production and management functions, which have, so far, weathered the test of public trial.

* One hospital, in an attempt to protect Cutter, even covered company labels on its solutions in anticipation of adverse reaction from patients.



DR. 'BOB': 'We're in the Salk vaccine program with all four feet . . .'

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B & I



DR. ABRAMS: For chemical workers, he prescribes broader coverage.

LABOR

More Medical Care: The AFL Chemical Workers Union is telling all its members about the recommendations of Dr. Herbert Abrams, the union's medical consultant. Abrams holds that chemical workers:

- Should have comprehensive medical care, including preventive treatment.
- Should try to set up health centers with group-practice, direct-service programs, in which members receive service rather than cash.
- Should try to get state legislatures to appropriate more money for governmental industrial hygiene agencies that are "weak, under-staffed, and under-budgeted."

Phosphate Strike Ends: The year's biggest strike in the U.S. chemical industry ended last week as full production was resumed in the Florida phosphate area. Nearly 4,000 employees represented by International Chemical Workers Union (AFL) had been on strike against eight major phosphate producers and processors, starting on June 1.

Final settlement came when ICWU Local 35 yielded on certain work assignment rules that International Minerals & Chemical Co. insisted on keeping in the contract. Company President Louis Ware said the rules changes demanded by the union "just cannot be granted if we are to produce phosphate competitively." In all cases, wage rates are up about 8½¢ now, will rise an additional 4¢ next summer.



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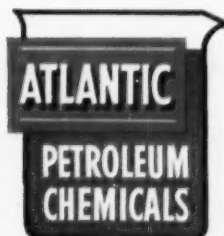
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Flat Sewn Valve Bags	✓	
Flat Sewn Open Mouth Bags	✓	
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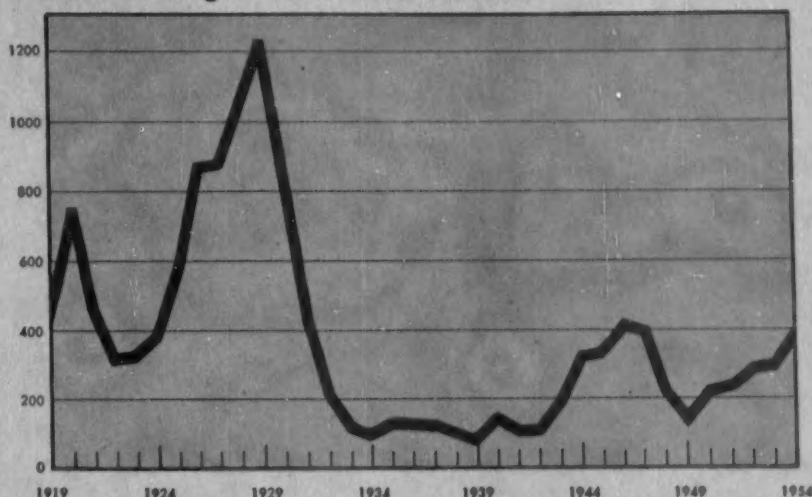
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Charting Business

CHEMICAL WEEK
OCT. 15, 1955

Rash of Mergers? Look at the Record



Source: Federal Trade Commission.

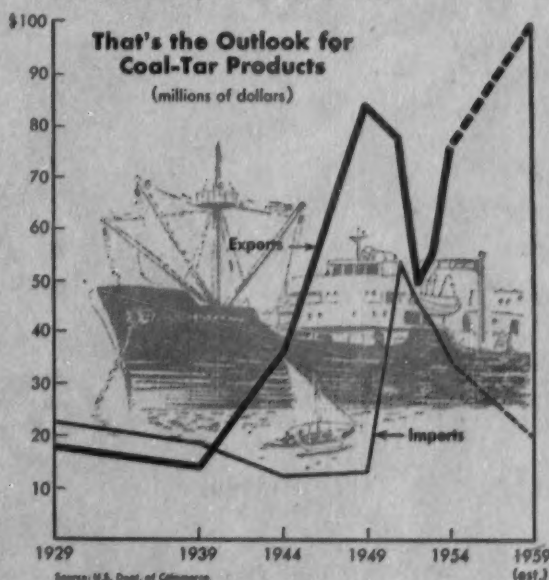
A FAVORITE propaganda charge of leftists is that industrial mergers in the U.S. have been adding to the power of big business at a record rate since the end of the Korean War. But statistics (compiled this week by the Federal Trade Commission) fail to support such a charge.

Mergers in manufacturing and mining (including the bulk of all chemical proc-

ess companies) totaled 387 in 1954—a long way from the 1,245 mergers in 1929, and well below the 760 mergers in 1920.

Moreover, the merger rate in 1955 should not surpass that of 1954, and outlook for 1956 (in the face of continually tightening Justice Dept. regulations) is for a "gradual tapering off" of inter-industry amalgamations.

EXPORTS UP, IMPORTS DOWN—



Source: U.S. Dept. of Commerce.

IN THE light of possible renegotiation of duties on exports of coal-tar products to a dozen different nations (see p. 15), outlook for U.S. producers is brightening.

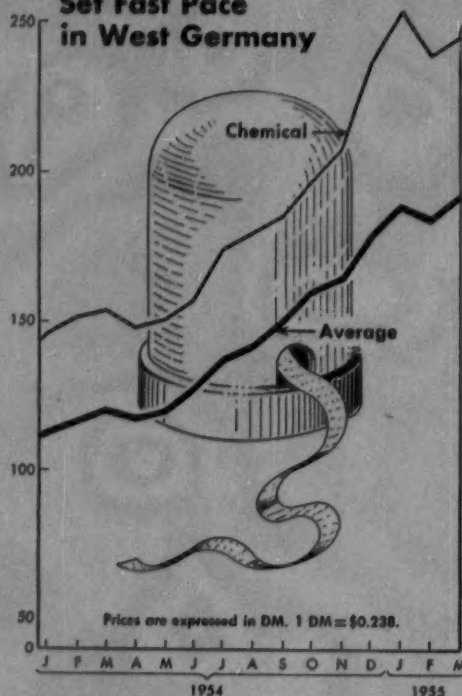
Last year, value of coal-tar exports totaled \$75.8 million—a 36.6% jump over 1953 (when value of exports was \$55.5 million). And this year, if eight-month figures prove valid indicators, the increase could push the total close to \$85 million.

As far as imports are concerned, a reverse trend is currently in evidence. Whereas, in 1953, value of coal-tar imports into the U.S. stood at \$41 million, it dropped 15.9% in 1954—to \$34.5 million.

Charting Business

(Continued)

Chemical Stock Prices Set Fast Pace in West Germany

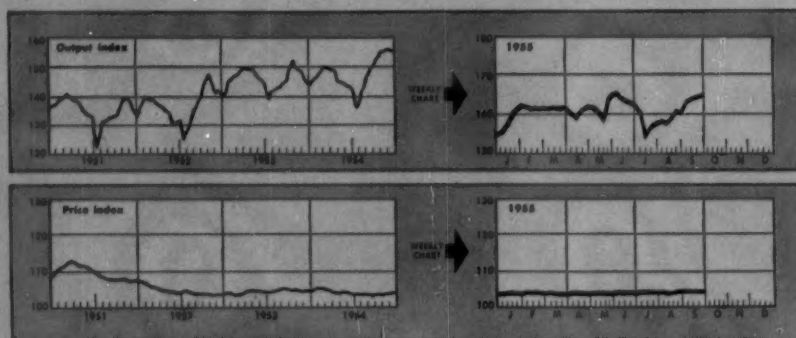


WITH chemical sales, net profits and dividends soaring to new heights, West German chemical stock prices today are setting the pace on ticker tapes.

Reason for the surge is apparent: investors (both in Germany and abroad) are apprised of the fact that the industry is heading into a period of close-to-capacity production.

Exports are on the rise again, too, chiefly to non-European dollar markets. In the first six months of 1955, for example, sales to North and Central America totaled DM 138 million—an increase of DM 30 million over the comparable period in 1954. Shipments to Asiatic, African, and European countries are likewise ahead of 1954 rates—but their percent of total export sales is decreasing.

Lower corporate taxes (45%) are also in effect today in West Germany; much of the saving is expected to be passed on to the stockholder in the form of dividends.



WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947-49=100)	165.5	165.1	151.3
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.4	104.2	104.3
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	448.2	466.2	333.1

MONTHLY INDICATORS—Production (Index 1947-49=100)

	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	140	131	123
All Chemical Products	164	158	144
Industrial Chemicals	184	177	151

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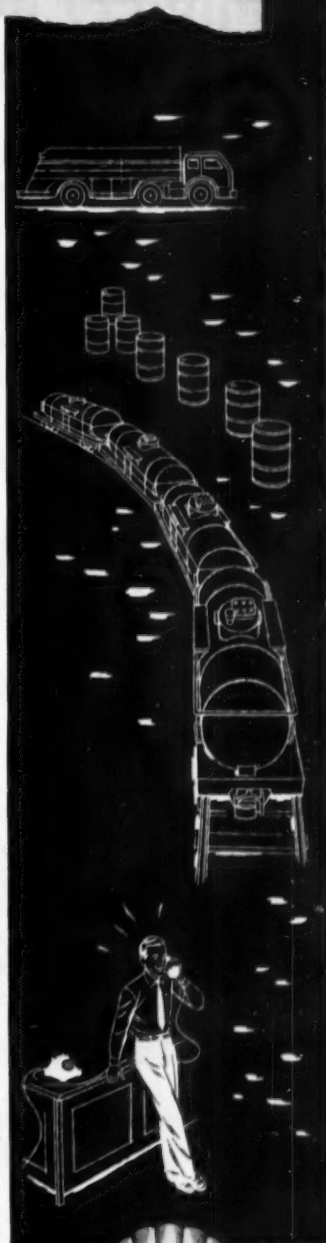
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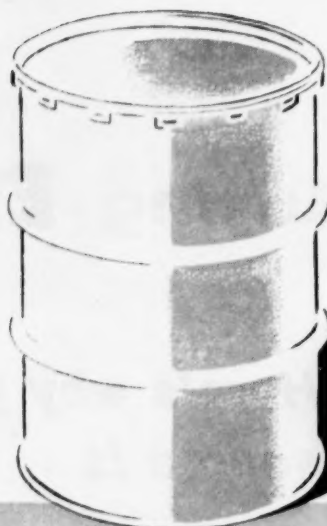
Sodium Methylate SPEC 101

Packaged in airtight steel drums
of 25, 50 and 200 lbs. net

Free Flowing white
hygroscopic powder

Sensitive to air and moisture
Packs 4.6 pounds per gallon

Formula NaOCH_3
Formula Weight 54.03



CHEMICAL ANALYSIS

Sodium Methylate Typical 97.5%	Methanol Free..... 0.5
Sodium Hydroxide..... 0.5	Soluble in Methyl Alcohol
Sodium Carbonate..... 1.2	Decomposed violently
Sodium Formate..... 0.3	by water
Standard 95.0% min.	

also available

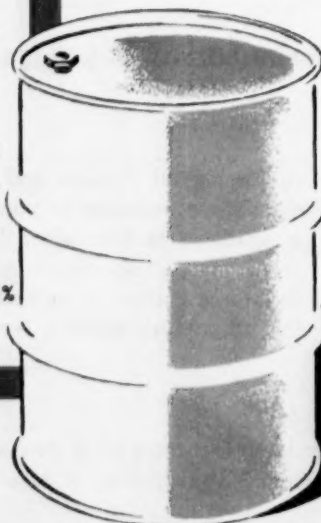
Sodium Methylate Liquid

SPEC 102

Packaged in Steel Drums 425 pounds net

25% solution of sodium methylate
in methanol

Analysis:
Sodium Methylate Content 24.5 to 25.5%



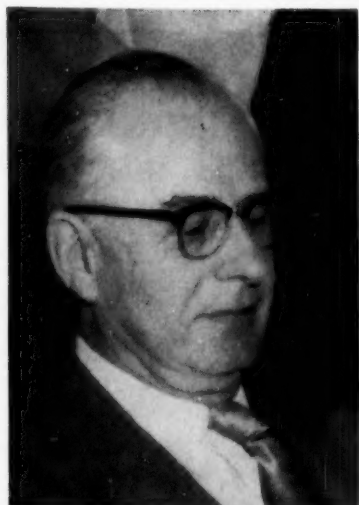
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NIAGARA'S BEYER: On plan to use water for cooling, he fears the worst.

LEGAL

Compliance Comes First: Typical of the rigor with which state and local officials are now enforcing antipollution laws and ordinances is the decision by the City-County Air Pollution Control Commission at Louisville, Ky., to bar reopening of a chemical plant there until certain pollution abatement equipment is installed. And at Buffalo, N.Y., Chairman John Beyer and his Committee for a Clean Niagara River are trying to block use of 150 million gal./day of Lake Erie water as a coolant in local plants.

Fines and Damages: Out in Oregon, three chemical process plants are involved in air pollution lawsuits: Reynolds Metals has been ordered to pay \$38,293 for alleged injury to nearby residents from fluorine fumes from an aluminum smelter mill; Pacific Adhesives has been fined \$100 for permitting allegedly offensive smells to escape from its plywood glue plant; and Weyerhaeuser Timber Co.'s kraft board process plant at Springfield is target of two suits. Pacific Adhesives has decided to appeal, and Reynolds is considering an appeal "in view of the importance of this case to American industry." The "nuisance" petition against Weyerhaeuser was filed by 11 Springfield residents under a state law being used for the first time against a large concern; company officials have not, as yet, made a counter-move.

SHORT NOTICE

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dbpc -

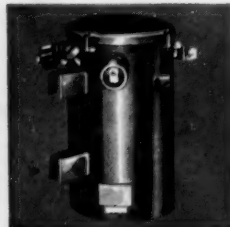
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with the accent on economy



In Gasolines



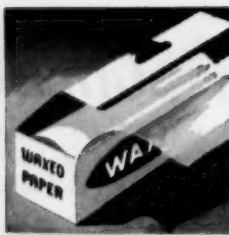
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In Transformer Oils



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In Wax



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dbpc® Antioxidant is a light-colored solid alkylated phenol. It has proved to be a highly effective antioxidant in a variety of industries. The extremely small concentration required for efficient protection makes **dbpc** particularly economical.

dbpc Antioxidant is available in two grades:

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industrial fats, greases, electrical insulating oils, turbine oils, and waxes.

- **FOOD GRADE** — an effective preservative for inhibiting oxidation in edible fats and oils, and fatty foods including lard, shortening, cheeses, peanut butter and many others. Extremely economical — as little as 1 part in 10,000 will increase stability of texture, odor, color and flavor — **dbpc** antioxidant protects food against spoilage during manufacture, storage, and use.

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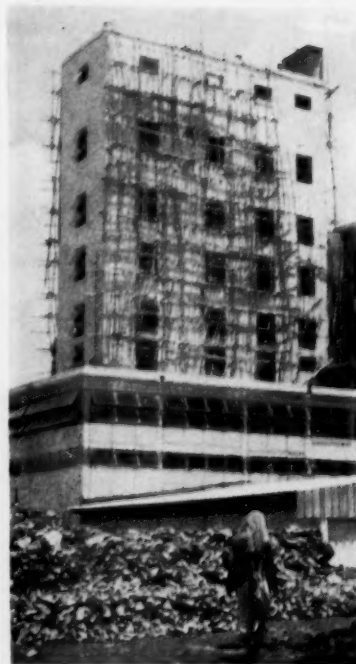
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Koppers Chemicals

B & I



CALCIUM CARBIDE PLANT: At Birlapur, new style Indian architecture.

FOREIGN.

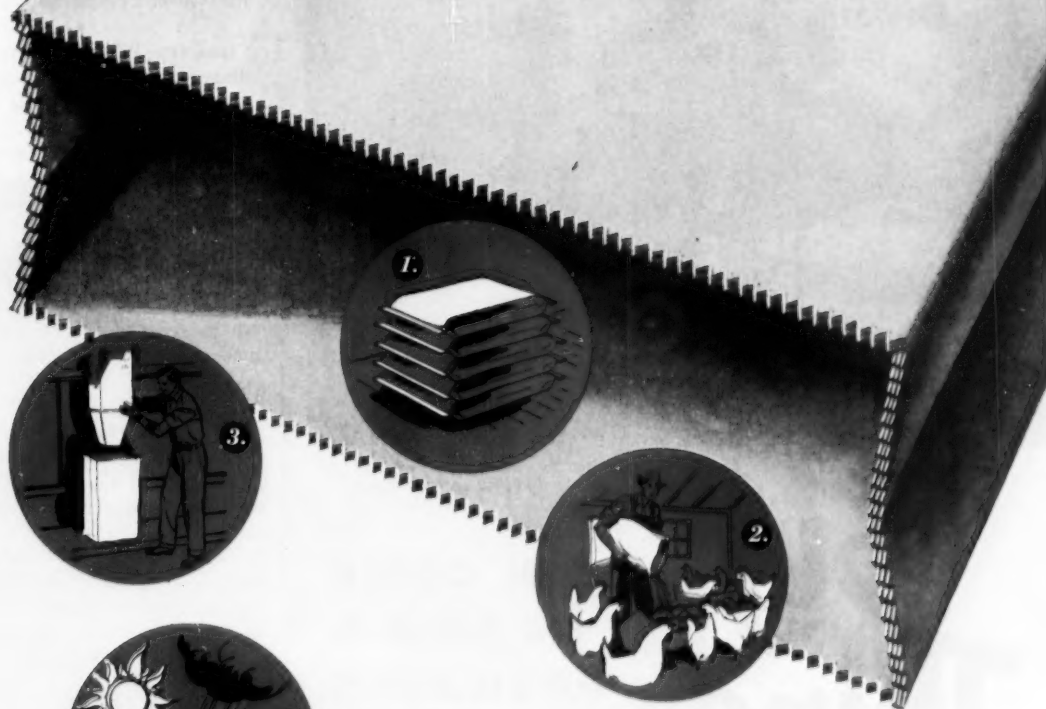
Calcium Carbide/India: India's latest chemical achievement—a calcium carbide plant at Birlapur; capacity, 3,500 tons/year—could set a pattern for future construction in tropical areas.

The plant's ventilation system, designed in Italy, gives the whole structure the action of a colossal chimney, makes unnecessary the use of air conditioning. Because it's erected on muddy soil (where the underground water level is only 6 in. below ground level), the plant's underground check rooms are built of reinforced concrete, lined with steel; aboveground construction consists of an all-welded space-frame.

Importance of this (and other such plants, planned for construction) to India is incalculable. In the single case of calcium carbide, India is still importing 745,000 tons (valued at \$900,000) annually, could materially cut the drain on its dollar credit if other such plants were put in operation.

Petrochemicals/South Africa: First production of gasoline has been achieved at the government-sponsored oil-from-coal plant (SASOL) in

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Clarigester is a trade mark of Dorr-Oliver Inc., Reg. U. S. Pat. Off.



B & I

South Africa. When in full operation, the plant should supply one-fifth of South Africa's need for gasoline, should also supply a flood of petrochemicals to the nation's growing chemical process industries.

Iron Ore/Philippines: According to latest reports from Philippine Agricultural Secretary Juan de G. Rodriguez, the discovery of 29 million metric tons of iron (containing 1.38% nickel ore) on Nonoc Island may be only a sample of vast reserves in the Philippines.

Nonoc Island, just off the tip of Mindanao, is typical of the smaller Philippines. Early tests also indicate the presence of cobalt (in amounts approximately one-tenth that of nickel) in the ore.

Investment/Mexico: Scott Paper Co. (Chester, Pa.) plans to acquire an interest in Cia Industrial de San Cristobal, producer of bagasse from sugar cane pulp.

Purpose of the move is to enable Scott to start paper manufacturing in Mexico, but production details are as yet in the early planning stage.

Anticipated construction date: mid-'56.

KEY CHANGES . . .

G. Davidson, to vice-president, manufacturing, Shell Oil Co. of Canada, Ltd. (Toronto).

Glenn A. Nesty, to vice-president, Allied Chemical & Dye Corp. (New York).

Robert R. Williams, to director, General Aniline & Film Corp. (New York).

John T. Connor, to president and director; **Henry W. Gadsden**, to executive vice-president and director, Merck & Co., Inc. (Rahway, N.J.).

John W. Pearson, to manager, new products division, Minnesota Mining & Manufacturing Co. (St. Paul).

Robert L. Frank, to director, research, Morton Salt Co. (Chicago).

Francis L. Capers, to general sales manager, drugs, McKesson & Robbins, Inc. (New York).

Sheldon V. Clarke, to manager, General Purchasing Dept., Union Carbide and Carbon Corp. (New York).

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... as volatile as chloroform

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SPECIALTIES



WIPE ON, WIPE OFF: A less-often, easier job is the furniture polish goal.

Silicones Top Elbow Grease

Silicones solve the old polish problem: How to apply a hard finish easily. Reward: 60% of the \$17.5-million furniture polish market.

Specialty makers are constantly looking for additives—something that will set a product a little apart, give that little extra sales appeal that will push a brand ahead. Furniture polish makers, after trying such things as insecticides (to guard against wood borers), antiseptics (to keep surfaces germ-free) and stains (to cover up scratches), with varying success*, found their big ingredient about eight years ago: silicone. Almost immediately, it turned the business upside down.

Although the big makers didn't get into silicones until 1951 (Tone, made by Tone Manufacturing Co., Grand

Rapids, Mich., had limited distribution for several years before anybody else had a silicone polish for furniture), this type now accounts for 60% of all furniture polish sales—a 20% gain over the year before (during this same period, over-all polish sales went up 7%).

Waxes and Wanes: The market itself has a tendency to fluctuate (a possible reason: a bottle lasts so long that not every housewife buys each year)—estimates of 1954's sales (\$17.5 million) are up from 1953's (\$16.5 million), which were down from 1952's (\$17.3 million)†.

As might be expected, S. C. Johnson & Son, Inc. (Racine, Wis.) has the biggest slice of the pie (some estimate that it has over 50% of the furniture polish market). Pride, John-

son's silicone preparation, is the industry's biggest seller. Other first division silicones are O'Cedar Dri-Glo (O'Cedar Corp., Chicago); Simoniz Hi Lite (Simoniz Co., Chicago); Nomar (Fuller Brush Co., Hartford, Conn.); and Beacon (Beacon Chemical Industries, Cambridge, Mass.).

Hardest hit by the silicone preparations are the creams, introduced right after the war, which appeal to much the same market, do a similar job. But far from being knocked out, several of the national top sellers are creams: Johnson's Cream Furniture Wax; Stanley's Cream (Stanley Home Products, Inc., Westfield, Mass.); Parker's Perfect Polish (C. W. Parker Co., Des Moines); Sani-Wax (Sani-Wax Co., Dallas).

Elbow Grease: More rubbing is required for shining cream waxes than for shining silicones, and the former don't wear as long. But they cost only about half as much. Generally an emulsion of naphtha, water, and a balance of such waxes as carnauba, candelilla, beeswax, ceresin, stearic acid (balanced to get the optimum combination of cost, color, solvent retention, gloss index, and permanence), the creams last longer (and are harder to apply) than oils, but not as long (or are as hard to apply) as pastes.

Oils, the cheapest preparation (at retail, approximately 15¢ for 8 oz. against silicone's 80¢, cream's 40¢), are much less affected by the silicone triumph. The still unbroken tradition in the South of using oils and pastes has kept silicone sales low there. Behind the tradition is the low average income, which tends to make money worth more than work.

Basically, the oil-type furniture polish consists of mineral oil (sometimes, with an emulsifier, in an emulsion with water—to make it easier to apply, have a higher luster) with additives to improve polishing qualities, to impart a desirable odor or sometimes a color. Old English Scratch Cover Furniture Polish (Boyle-Midway, Inc., Cranford, N.J.) is an example—it contains a dye to tone down scratches on dark furniture.

Easy and Hard: Easier to apply than oils, longer-lasting than creams (but not as long as pastes), silicones seem to have solved the old polish conflict:

* Most polish makers agree that insecticides and antiseptics have no place in furniture polish because of the hazard of transference to the mouth (particularly of children), and because they do little good, anyway. Scratch-covering dyes, on the other hand, have been successfully used by many makers, are available in Simoniz's silicone product, Hi Lite.

† Market figures from *Food Topics* magazine.



Dennis Chemical Co., St. Louis, Mo., makes the plastisol coating based on BAKELITE Vinyl Dispersion Resins used on this battery box made by Atlas Tool Mfg. Co., and distributed by Associated Equipment Corp., St. Louis, Mo.

Could your **METAL COATINGS** meet this "battery test"?

When autos stall, this tow-car battery kit starts them. It consists of a storage battery and two 20-foot cables, all carried in a chest coated inside with plastisol based on BAKELITE Brand Vinyl Dispersion Resins.

Think of the service conditions... Weather extremes. Moisture. Corrosion. Acid spillage. Rough handling. Ask yourself whether any of your present metal coatings could endure such abuse.

This plastisol coating is applied over a one-coat primer that can bond it fast to steel, copper, brass, aluminum, or galvanized iron. Soft and rubbery, the

plastisol cushions the load and acts as electrical insulation, besides protecting the metal chest. It can be formulated for application by dip or spray... can form a coating that's soft, resilient, and decorative, or hard, tough, and thick. Slush-molded plastisol based on BAKELITE Vinyl Dispersion Resins forms the clamp grips in this kit.

To finish the story, the outside of the chest is protected by a spray coating based on BAKELITE Vinyl Resins—making the job 100% vinyl coated. If you want protective coatings like these, investigate by writing Dept. CB-34.



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SPECIALTIES

getting a hard finish easily. Typically, a silicone product will contain silicone fluid, carnauba wax, a mineral wax like Cardis 319 and mineral spirits, the spirits comprising over 95% of the total. In polishes, the silicones:

- Have a low surface tension, which makes possible an easy-to-wipe-on polish requiring little buffing.

- Lubricate the wax crystals without softening or plasticizing them, leaving a coating of hard, shiny wax.

- Leave a smooth, dry surface that doesn't hold dirt (oils leave a dust-catching, easy-to-smear finish).

- Repel water.

Several disadvantages:

- Before buffing, the silicone coat is hazy, which makes it impractical for highly carved furniture.

- The mineral spirit solvent required is inflammable (flash point: around 100 F).

- They are expensive.

- They make refinishing hard.

Lasts Too Long: Work has been done on the refinishing problem, which has been a big obstacle (furniture refinishers and sellers had been warning customers against the new polishes). Even the most careful removal operations leave enough silicone to keep lacquer and varnish from adhering properly to the surface, causing craters. The answer may be a barrier undercoat developed by General Electric and Hercules Powder, consisting of shellac and alcohol soluble nitro cellulose. (Some formulations are now available from Star Chemical, Chicago, and Behlen Brothers, New York.)

With this stumbling block kicked aside, silicone people look to moving further into the furniture polish business. The big story, they think, will be when silicones are well established in paste, and particularly cream, formulations (present silicones are liquids—Fuller's Nomar is virtually the only cream silicone). The creams will not settle out on the shelves as fast as liquids and, properly formulated, should do a better job.

Meanwhile, in its own up-and-down way, the furniture polish business as a whole should move forward. An important market factor is new home construction—which eventually leads to furniture sales. It's expanding a market in that manner rather than shifting emphasis from one polish form to another, which most manufacturers prefer.



The laboratory methylating equipment shown above is being explained by Dr. T. R. Patterson, head of our Methylation Department.

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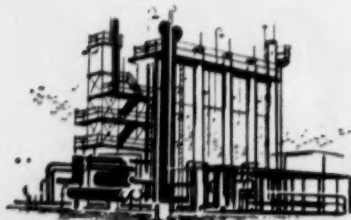
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Catalysts



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SPECIALTIES

Reconsidered Residues

There's good news for pesticide manufacturers from the Food & Drug Administration about the establishment of pesticide tolerances.

FDA reversed an earlier opinion, which would have barred use of the miticide, Aramite, and set a 1-ppm. tolerance for use on 19 crops*, after a five-man advisory group headed by Yale University's Harry S. N. Green—the first to be appointed under provisions of the Miller pesticide amendment—made a similar suggestion.

The decision shows that the drafters of the amendment, by providing for such a review committee, put a wise

* Apples, blueberries, cantaloupe, muskmelon, oranges, peaches, pears, plums, raspberries, strawberries, sweet corn, tomatoes, watermelon, celery, cucumbers, grapefruit, grapes, green beans, lemons. No residue is permitted on forage crops.

safeguard into the law, especially where there is evidence that could be disputed. And the Aramite matter was certainly such a case.

Basically, the data available were these: feeding tests showed that Aramite causes tumors at a 5,000-ppm. level, and, to a lesser extent at a 1,580-ppm. level. Among rats fed Aramite at a 500-ppm. level, there was evidence of liver injury, and in one animal, a microscopic lesion. Dogs fed the material at these three levels showed some liver injury, but no lesions at any level. No data had been presented for feeding any animal at less than a 500-ppm. level.

The committee took into account that even though 200-ppm. concentrations of DDT produce a liver hyper-

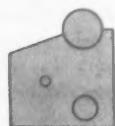
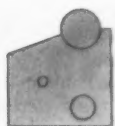


Cosmetics for the Male Market

HAIR RETOUCHING, scalp treatment, mud packs—they're all part of the course at a new place in New York, the Gourielli Shop for Men. Gourielli goes most firms offering men's toiletries one better, offers such products as Tone, a skin cream for men (for after-

shave use), and Medicated Cream, to heal minor blemishes, dry up oiliness.

Long known for its cosmetics for women, the firm is discovering that there is also a substantial market in men's grooming products—and that many sell to both sexes.

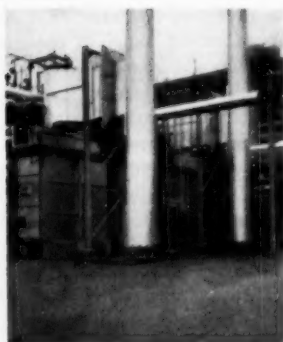


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*I*n this huge, modern plant at Pensacola, Fla., the Chemstrand Corporation is now operating the first wholly integrated nylon manufacturing unit in the United States. Here nylon yarn is produced from raw materials to finished product in a single plant.

The synthesis of hexamethylenediamine adipate from its component elements, and its subsequent polymerization, require high temperatures which must be very closely controlled throughout the various processes. These exacting thermal requirements are met by three 8,000,000 btu/hr Dowtherm vaporizers, engineered, manufactured and installed by Foster Wheeler.

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SPECIALTIES

trophy and have a "minimal carcinogenic tendency," the material may be present in marketed commodities at up to a 7-ppm. concentration. It feels that the principal problem in evaluating use of Aramite was whether or not a noncarcinogenic feeding level had been established for rats.

And on this question, there was disagreement. The committee heard reports about the one microscopic lesion that was developed in the 500-ppm. feeding test.

Unforeseeable: The committee, in its report, said that it felt the fact that U.S. Rubber Co. did not supply data on concentrations of Aramite between 0 and 500 ppm. did not "represent negligence on the part of the petitioner, since, when the Aramite was released in 1953, no necessity could be predicted for an experimental design that would reveal neoplasia . . ."

It recommended that U.S. Rubber "be advised to secure acceptable data" on chronic toxicity and carcinogenicity of Aramite at levels between 0 and 500 ppm., and that the whole problem be reviewed again in 1957 when such data are available.

"The committee does not wish to leave any impression," the report emphasizes, "that their recommendation in this case for the establishment of the tolerance of 1 ppm. for Aramite should create a precedent for inadequate experimental design, and it therefore recommends to manufacturers that substances proposed for possible incorporation into foods, or which might leave residues on foods, be tested over a wide enough range of concentration *in advance of marketing* to determine with clarity the feeding levels at which *no injury* can be demonstrated."

Open to Change: But as far as all pesticide makers (and food additive manufacturers) are concerned, the most important part of the committee's statement, and its tacit acceptance by the FDA, is this:

"The committee [barring a change in the present theories about cancer causes] believes it to be logical scientifically to utilize the same standards of safety for so-called weak carcinogens, like DDT, methoxychlor and Aramite, as with other chemicals not shown to produce such effects, i.e., the utilization of 'demonstrated injury' as a criterion of toxic levels. On this basis the use of extrapolation or interpolation of dose-response data with these

THE RARE EARTHS

a report by Lindsay, world's largest producer of cerium, rare earth and thorium chemicals

Let's look back billions of years. Far beyond the beginning of history, back to the very formation of the earth. Here the rare earths were created . . . conceived in the raging inferno of a newborn planet.

Down from the high country trickled the streams, joining into rivers, rolling on to the immense seas that covered much of the globe. On the deltas, the rivers deposited their loads of sand . . . some of it *monazite*, the glassy, brown globules that hold the rich treasures of thorium and that peculiar and wonderful chemical clan . . . the rare earths.

This was the beginning . . . this was the formation of the deposits of monazite that are found today in such widely separated locations as the Union of South Africa, India, Brazil and, domestically, certain southeastern and far western states.

* * *

The rare earths are metals, not earths — and they are by no means rare. Together they comprise approximately five thousandths of one per cent of the earth's surface. This group of 15 elements — atomic numbers 57 through 71 — has evolved from a role of interesting chemical oddities to a position of exciting importance in scientific and industrial technology.

Until recently, the rare earths remained virtually untouched by commercial investigation. Many researchers believed them unavailable for large scale use because they were difficult to separate. This is no longer true. Lindsay is refining and separating these unique elements in large volume for commercial use. The rare earths offer a rich field for scientific study and hold significant possibilities for profitable

application in a wide variety of industrial processes.

The use of rare earth-thorium ores was born with the invention of the incandescent gas mantle late in the 19th century. The key element in the manufacture of these mantles was thorium, which is found in conjunction with the rare earths in monazite ores. Interest in elements 57 through 71 was aroused and since then, they have become increasingly important in a wide variety of manufacturing processes.

Motion picture projectors, lighter flints, alloy steels, ceramic coloring, glass coloring, glass decolorizing, glass, mirror, television picture tube and granite polishing, photosensitive glass, paint driers, sunglasses, nausea preventatives, reagent chemicals . . . these are but a few of the many commercial applications of Lindsay rare earths.

With the invention of the electric light, the demand for gas mantles dropped sharply, and with it this need for thorium. In 1945, however, interest in thorium again shot upward, for this element holds great promise of becoming important in the development of atomic energy for peacetime use. You see, while thorium alone is not fissionable, it becomes so when combined with small amounts of uranium. Thus reactors, using relatively inexpensive amounts of thorium and uranium can equal the electricity-generating power of thousands of tons of coal. The nation's need for this material has prompted Lindsay to accelerate its search for domestic deposits of monazite ore which is now obtained from the Union of South Africa. As more thorium is extracted from this ore, more rare earths are available for industry.

Rare earth and thorium chemicals have attained new importance through the work of Lindsay scientists who, for 53 years, have pioneered the research and development of these chemical tools for industry. This, coupled with extensive raw material sources, has helped Lindsay develop the world's largest facilities for the production of rare earths. Salts of thorium and rare earths are available for prompt shipment — a gram or a carload.

We have noted a few of the industrial applications of rare earth chemicals. There are others and certainly many more as yet undiscovered. If you are curious about the possibility that rare earths may have useful applications in your industrial processes, or would like more information from us, we welcome your inquiry. Technical data is available and the facilities of our research staff may be helpful to you.

Please address your inquiry to:
Dr. Howard E. Kremers, Director of Research.

LINDSAY CHEMICAL COMPANY

270 ANN STREET, WEST CHICAGO, ILL.



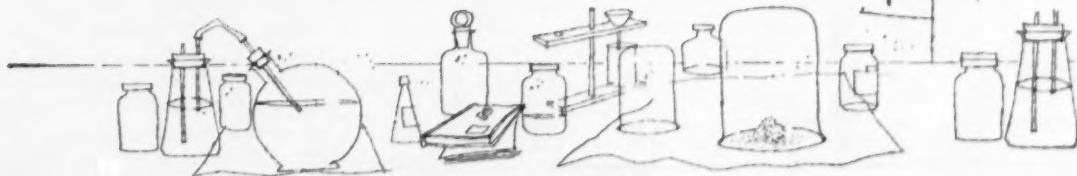
Latest addition to Lindsay monazite processing plant at West Chicago.



Part of 12,000,000 pound stock pile of monazite in Lindsay warehouse.



Small section of filtration floor in new plant addition.



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SPECIALTIES

agents would be acceptable as reasonable assurance of safety since those concentrations below which no injury is demonstrable would, by analogy, be considered to be noncarcinogenic levels."

Go's Going

Taking up where cationic laundry additives (*CW*, July 30, p. 61) leave off is a new household specialty, General Foods' "Go." The novel product, a silicone aid to ironing, has already been greeted with solid success in its introductory month in Ohio, Indiana and Kentucky test areas.

In marketing Go, GF's Franklin Baker division (Log Cabin Syrup, La France) stresses that it is hunting for customers who, for one reason or another, have not been buying its Satina. Satina, a wax-type formulation, has been around for about 40 years, and like Go, is designed to prevent a hot iron from sticking to starched cloth.

Go—basically a silicone oil in a dispersant powder carrier (with borax as a drying agent)—is box-packed. The housewife adds a little to the water she uses for dampening clothes, wherein it forms a clear emulsion. Enough for about two dozen washes are in the 18-19¢ box.

The product can be used with both starched and unstarched clothes. Besides improving the ease of ironing, it is claimed to impart a better "feel" and finish to the cloth. General Foods has applied for a patent on the product.

Sweet and Safe

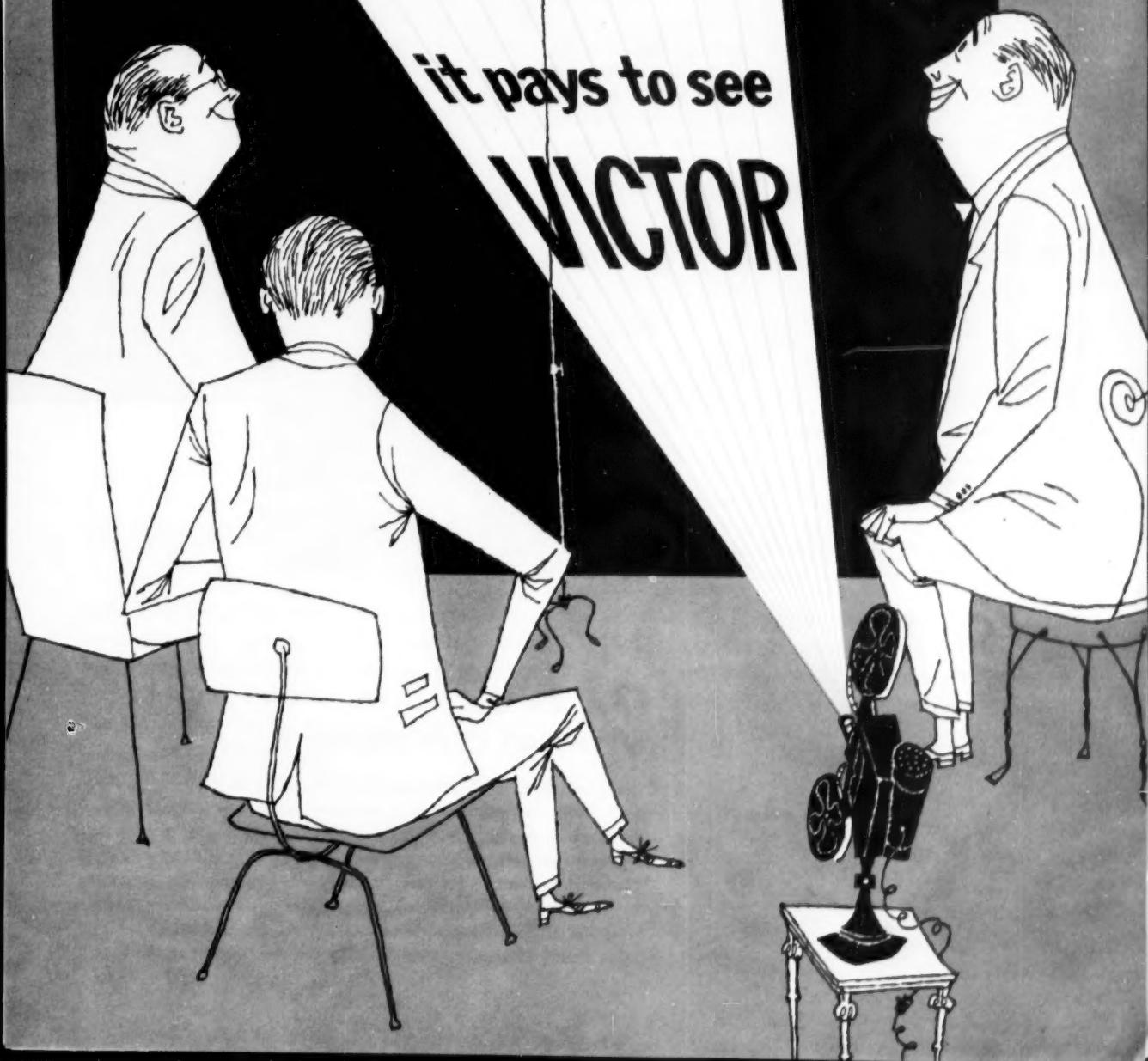
Both saccharin and Sucaryl are safe to use—that's the simple conclusion presented in the Food Protection Committee's (of the National Research Council) report on the safety of artificial sweeteners for use in foods.

Summing up the results of several studies on human use of the sugar substitutes, the report does much to counteract certain implications of a preliminary report. That report, felt Abbott Laboratories (long the sole source of the cyclamate), raised unfair questions about the safety of Sucaryl in dietetic beverages.

The committee suggests that the materials "should be subject to continuing observation for possible deleterious effects under prolonged and varying conditions of use and should



it pays to see
VICTOR





PATTY BAKES A CAKE

Now-a-days, little girls of eight or so bake cakes that rival mother's when they use today's wonderful cake mixes. Just add liquid, stir, and into the oven it goes. Victor's complete line of *controlled* reaction phosphates and technical service helped to make many of these new mixes possible. Producers of cake mixes, self-rising flour, self-rising corn meal, and pancake flour, all have benefited from Victor's 57 years of specialization in the field of phosphates.

For information about phosphates that are used by leading mix makers and the milling industry, send for the Victafile listed on the back page.

TIME TO RELAX... EVERY WASHDAY

Washdays are no longer work . . . thanks to the new detergents that contain soil-chasing sodium tripolyphosphate. Today, many of these new detergents contain Victor "tripoly". Tripoly is preferred because it helps remove up to 41% more dirt than cleaning agents compounded without this remarkable phosphate.

The complete list of phosphates used in detergents and soaps is given in the new Victafile. Other industry Victafiles are listed on the back page. *It Pays to see Victor!*



LOUNGE BY HERMAN MILLER

FILL 'ER UP WITH "OXYCHLORIDE"?

Not quite. But if you buy gasoline containing an additive . . . it's quite likely the additive was produced with the help of Victor phosphorus oxychloride. "Oxychloride" is just one of a long list of intermediates that Victor offers the petroleum industry. These "chemical workmen" are used in many other industries, such as in drug synthesis, chemical manufacturing, plastics, and insecticides.

For additional information about Victor intermediates, and other Victor chemicals used in *your* industry, use the coupon on the back.





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Labor for the mechanical buffing of metal parts is costly, slow, and the results lack uniformity. Victor phosphoric acid, in a special bath, does a better job with less labor, and in a fraction of the time. Flat sheets of metal or pieces of intricate design come out of the bath with a brilliantly bright finish. The process works on

stainless steel, copper, brass, and other metals. Bright dipping of aluminum is another short cut to better finishes. This process requires no electric current.

See the back page for the complete list of the new Victafiles available. There's one for *your* industry. *It Pays* to see Victor!

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COMPANY _____

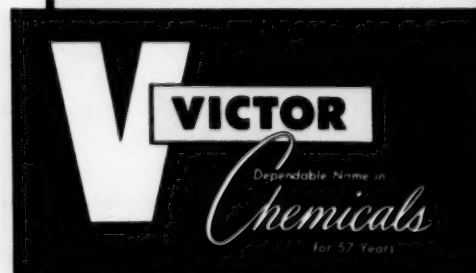
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CITY _____ STATE _____

ATTENTION _____

Please send sample of Victor _____

- ☐ We have a particular problem; if there's no obligation, please have technical service representative call.



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SPECIALTIES

be reappraised whenever the need is indicated by advances in knowledge."

Poly Jacket: John Powers suggests use of titanium dioxide in polyethylene used for flame-painting (U.S. Pat. 2,718,473, assigned to Union Carbide and Carbon). The process utilizes polyethylene (treated with 0.5-2% anatase crystalline titanium dioxide) in powder form. It is carried by compressed air to a nozzle, where it is heated to above 221 F (likely in a special flame nozzle). The surface it is to be applied to should be preheated to about 300-325 F.

Incense Rivals: For use as a space deodorant, Colgate's Earl Richardson has developed a special composition to be used in aerosols (U.S. Pat. 2,719,129). In addition to the propellant, a quaternary morpholinium alkyl sulfate is employed, along with a partial ester of a polyhydric alcohol and a higher fatty acid (to assure solubility of the deodorant).

• Monsanto, too, has devised an air deodorant. It consists of a hydroperoxide in a low-boiling chlorofluoromethane, is apparently designed for aerosol applications also. Only 0.03-1% of the hydroperoxide is required (U.S. Pat. 2,715,611).

Proceedings Moving: Copies of the proceedings of the 41st midyear meeting of the Chemical Specialties Manufacturers' Assn. (last May) are now being mailed out. The spiral-bound, 216-page booklet sells for \$7.50 in the U.S., \$8 elsewhere, is available from CSMA, 50 E. 41st St., New York 17, N. Y.

PVAc Coatings: Ready for production now is a new, 3,200-sq.-ft. paint plant of Duben Paint Manufacturing Co., Inc. (Buffalo, N. Y.). The firm will make paints based on polyvinyl acetate.

Michigan Addition: Hagan Corp. (Pittsburgh) plans to erect a \$1-million plant in Rockwood, Mich., for the manufacture of water treatment chemicals. The firm, makers of Calgon products, says the facilities should be in operation by fall of 1956.

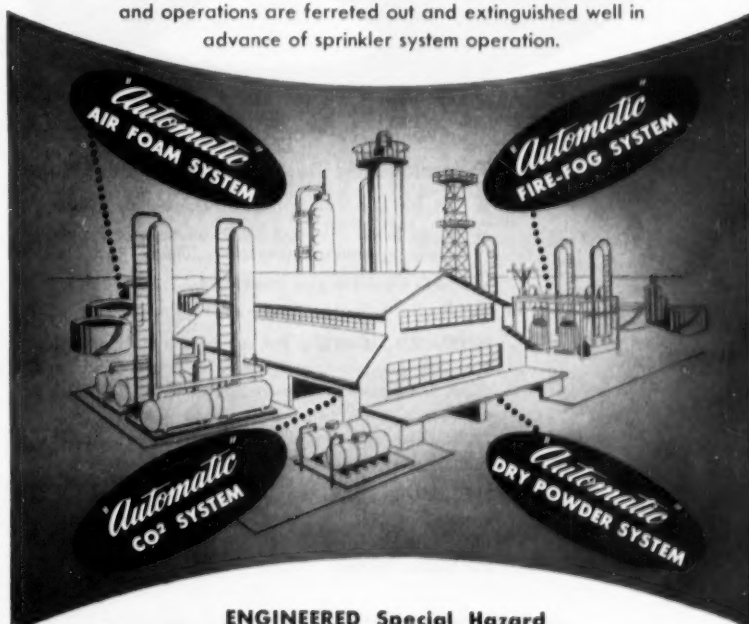
Bottle Loyalty: Not all the liquid detergents are being packed in metal containers. Sunlight Chemical Corp. (Phillipsdale, R. I.) is now producing



"Automatic" Sprinklers -PLUS- ENGINEERED Special Hazard PROTECTION

While "Automatic" Sprinklers are generally conceded to be industry's most effective weapon against fire, production methods and occupancy hazards in most manufacturing plants are undergoing constant change. For example: An improved system for paint application or metal de-greasing can increase the hazard of fire a hundred fold. And, standard sprinkler protection may not be enough to detect fire fast . . . extinguish fire instantly.

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ENGINEERED Special Hazard PROTECTION

should be planned in advance of actual plant production, and the proper safeguard incorporated in the design or set-up of the equipment. In this way, out-of-service time and costly future alterations can be eliminated.

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SPECIALTIES

Sunlight Liquid Detergent, packaged in Owens-Illinois glass bottles.

The move seems particularly unusual for Sunlight, which startled the trade a few months back by packaging household ammonia in a metal can (CW, Feb. 12, p. 64).

Kick in the Teeth: It likely won't be tubed in bond, but liquor-flavored toothpastes are on the market. Flavored with bourbon, scotch and rye, the dentifrices are produced by Don Poynter (Cincinnati).

Lightweight Law: A watered-down "unfair trade act" became law in Texas last month. The regulation prohibits any grocer who advertises merchandise for sale at below-wholesale cost from limiting quantities a customer can buy (thus competitors can also buy there in quantity). The law was sponsored by independent merchants seeking to halt "loss leader" selling by chain stores.



Pistol Grip

WHEN PUSHING the button doesn't appeal, you can now try a new, pistol-grip attachment for aerosols. Called Jiff-O-Jet, it is adaptable to any thumb-operated valve. The device is designed to prevent contact between container fluids and the hands, as well as to provide an easy-to-hold, nontiring release. Penn Square Products Co. (Philadelphia) makes the unit, sells it for 98¢.

Let's make a



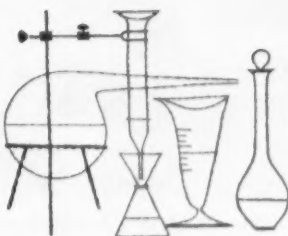
date

to



talk about

solvents



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solvents
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EASTMAN CHEMICAL PRODUCTS, INC., Kingsport, Tennessee

GENTLEMEN: Please have your representative call or write to arrange a meeting with me about the possibility of *isobutyl acetate* helping in our operations.

NAME

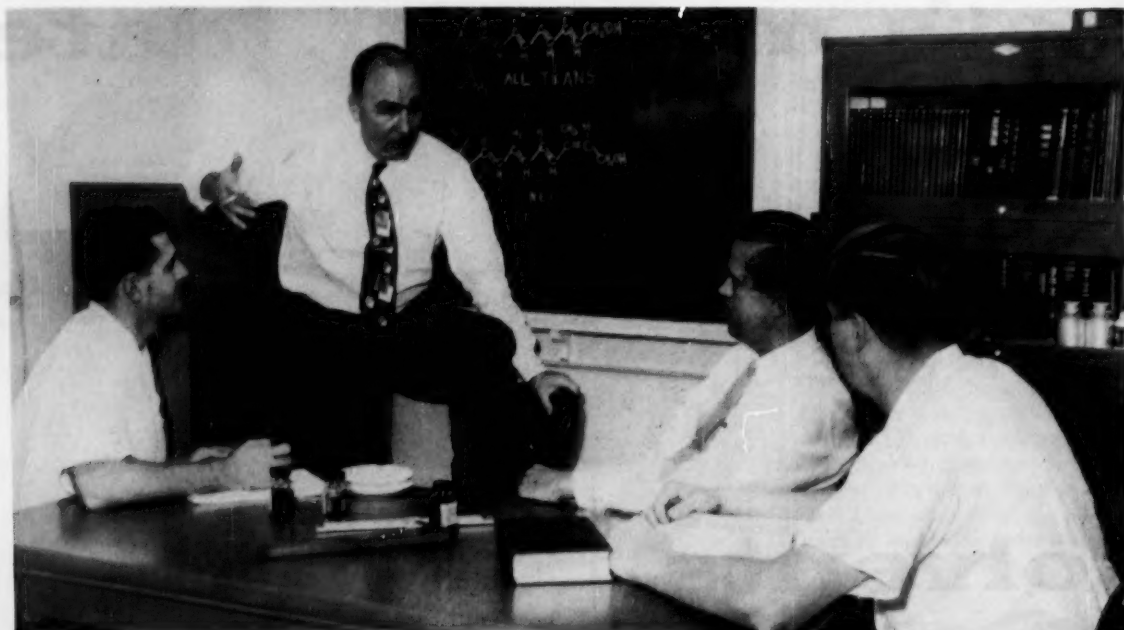
POSITION

FIRM

ADDRESS

CITY STATE

PRODUCTION



PFIZER PRODUCTION TEAM* at Groton parlays a combination of research and production know-how into a . . .

Payoff in Stability

By the time chemical processes reach the stage of commercial production, they're usually far beyond the researcher's realm of basic investigation.

* L. to r., Kardyn, Ass't. Plant Supt. A. T. Nielsen, Organic Dept. Head T. G. Drustrup, Steig.

But in some of the more complex plant operations, it's difficult to decide how little basic knowledge is enough. Chas. Pfizer & Co., Inc. (Brooklyn) faced such a problem when vitamin A moved into production at the company's Groton, Conn., plant, solved it by making production supervisors

of the chemists who did the basic research. The latest achievement of this unique research - turned - production team—a stabilized vitamin A palmitate product—hit the market just last week (*CW Technology Newsletter*, Oct. 8).

The need for closer-than-normal



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PRODUCTION

production control of vitamin A production is readily apparent from the complexity of the operations involved: Synthesis of the C_{20} vitamin starts with the conversion of citral (C_{10} derivative of lemon grass oil) into a C_{14} aldehyde. Next, a C_6 acetylenic alcohol is made from formaldehyde and acetylene, joined to the C_{14} compound by a critical Grignard reaction. The resulting acetylenic diglycol (oxenine) is catalytically reduced to hydroxene, which contains the carbon skeleton of vitamin A with one extra mole of water. Synthesis is completed by bromination and debromination to rearrange position of double bonds.

At this point in the process, a large portion of the product is channeled to the dry form of crystalline vitamin A acetate used in tablets and hard gelatine capsules. The balance undergoes further processing to convert it into the palmitate ester used for oil

suspensions and aqueous dispersions. And this is where Pfizer's research-production team (Chief Production Chemist Bill Steig and his assistant, Joseph Kardys) came up with a novel shortcut to maintain product purity.

Conventional conversion of the acetate, by saponification into the alcohol and by re-esterification into the palmitate, leaves some alcohol in the final product. Pfizer's method—direct transesterification with methyl palmitate—is a mole/mole reaction, yields pure palmitate ester.

Need for Stability: In the oil-suspension types of formulations (soft gelatine capsules, etc.), stability of vitamin A palmitate presents little problem. But in aqueous dispersions, which are necessarily acidic to preserve the other ingredients customarily present, the material suffers a gradual loss of potency during storage. And it was in the investigation of the causes of and means of preventing



Production Cuts Research Time

PFIZER'S experience at Groton proved that research, as well as production, can benefit from an interchange of techniques. Vitamin degradation studies, made on the Warburg apparatus (above), played a vital role in pinpointing the equilibrium point of vitamin A

isomers. Production chemists trained technicians to operate the instrument, kept tests running continuously. Putting these studies on an around-the-clock basis is credited with reducing research time, on this phase alone, by as much as two months.

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PRODUCTION

Story begins on p. 60



CLOSE TABS are kept on vitamin A—right through to final shipment.

this loss that the research background of Pfizer's production team paid off.

Tackling the problem from an organic as well as a strictly engineering viewpoint, Kardys and Steig first explored the possibilities of autocatalytic degradation caused by impurities. But when material of more than 100% purity (by USP standards based on natural vitamin A) still showed loss of potency, it was evident that purity alone was not the answer.

The next line of attack was an investigation of isomerization. Clue to the possible importance of this factor was the better-than-average stability of natural vitamin A produced by upgrading premium fish oil sources. Unlike the synthetic product, which consisted of all trans isomer, fish oil derivatives contain as much as 35% of the cis stereoisomer.

In tests with side products of vitamin A, Kardys and Steig found further evidence that isomerization held the key to stability. They observed that mixtures, which were low in trans vitamin A content, were actually upgraded as a portion of the cis isomer switched over to the more active trans form. Their conclusion: under normal conditions in aqueous dispersions, vitamin A palmitate tends to isomerize to an equilibrium mixture of one part cis and to two parts trans.

The next move was to develop a commercial means of converting the all trans synthetic product into the optimum equilibrium mixture. Pfizer has incorporated the additional step into its production process, but isn't ready to say just how it twists the molecule's tail from trans to cis orientation around the last double bond. Treatment takes place in an acidic medium, requires critical control of acidity to prevent undesirable conversion into the biologically inactive retro vitamin A.

Process Payoff: To formulators of aqueous vitamin A dispersions, improved stability means savings in the form of reduced overages. Now, it's customary to use an excess of the material (up to 50% in some cases) to compensate for degradation, assure minimum potency stated on the label. By accelerated tests, Pfizer found that typical losses are reduced from 15% to about 7½% by the use of its stabilized product.

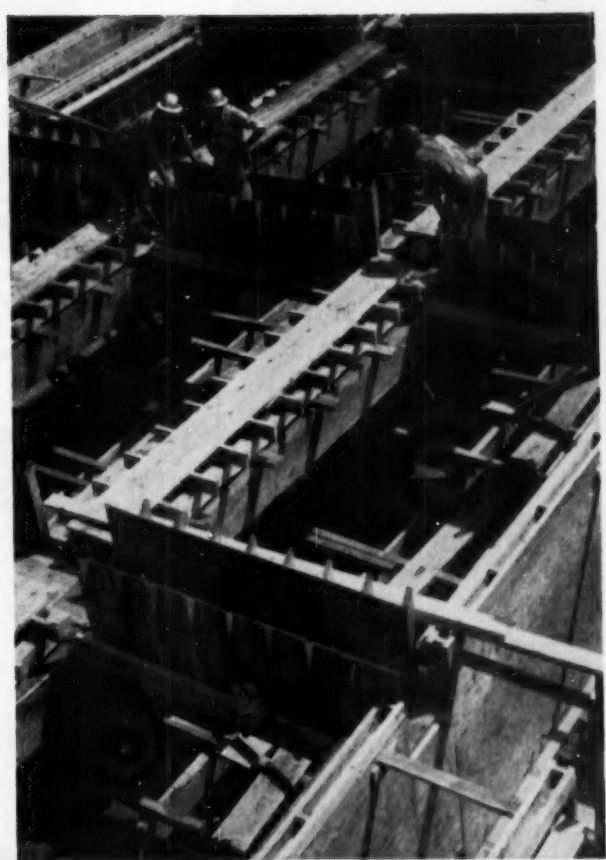
To Pfizer, the new product is a strong competitor for a bigger share of the \$1-million market for the aqueous form of vitamin A. But more than that, it's proof that a research approach to actual production, is a practical way of dealing with highly critical processes. And production can do the same for research.



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of bacterial and fungus attack by
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Glue-line-treated plywood had a high reuse factor (7-10 times) as concrete forms during construction of Seattle's Alaska Way viaduct.



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**Get the longest life possible
at no increased cost with
Di-iso Decyl Phthalate
Plasticizer**

Di-iso Decyl Phthalate is the most permanent phthalate plasticizer commercially available.

This recently developed phthalate plasticizer makes it possible for you to substantially increase the life of your vinyl products . . . at a volume cost less than that of Dioctyl Phthalate. In severe aging tests (120 hours @ 121° C. and 96 hours @ 136° C.) the results for Di-iso Decyl Phthalate indicated only about one-half the loss of flexibility of plastics containing Dioctyl Phthalate.

Di-iso Decyl Phthalate is a primary plasticizer for most resins. It is recommended for any composition where it is desired to have the all-around good properties of Dioctyl Phthalate with longer lasting flexibility.



Technical literature and samples will be sent immediately upon request without obligation.

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DEPT. 46

☐ Send technical literature.
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PRODUCTION

Safety and the Atom

The weather and the hazards of running an atomic plant have generated more conversation than action. Last fortnight at the Washington Atomic Industrial Forum (CW, Oct. 8, pp. 13, 77), Dan Hayes had his say on the second topic. The difference: as chief of the Safety & Fire Protection Branch of the U.S. Atomic Energy Commission, his talk was based on experience.

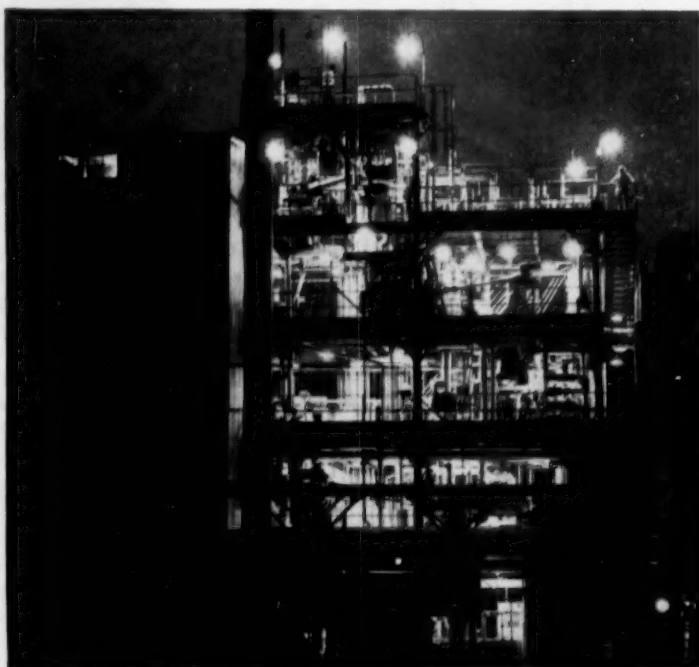
One point Hayes made forcefully: one bad accident in an atomic energy plant might well be enough to scuttle the whole program. Said he: "A generation ago, aeronautical engineers were split on whether lighter-than-air or heavier-than-air craft would be the air transport of the future." Three accidents (the Macon, the Akron and the Hindenburg) made them forget

about the construction of dirigibles.

Nothing like this has happened, of course, in the atomic energy program. Just the opposite, in fact: the program encompasses 105,000 people; its fatality record is only half that of the best record in U.S. industry.

However, in the case of atomic hazards, there's always present what Hayes dubs as "a new dimension," i.e., the long-term effect on people and things. "It is," says Hayes, "impossible to effectively separate this new safety dimension from the general safety of the plant."

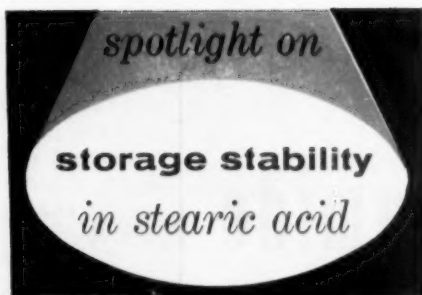
What it all boils down to is that unless special precautions are taken, injuries (real or alleged) can take place many years after the actual exposure. In the case of property, a



Film Base Plant Goes Outdoors

LATEST chemical processing activity to feel the yen for the great outdoors is photographic film mixing and formulating: Du Pont is just now starting up its \$6-million

Parlin, N.J., plant (above) for Cronar polyester film base, the first of its type in the country. This night picture, incidentally, was made on Cronar base.



*Emersol® 132 Lily withstood 2 years
Storage with no ill-effects*



Original Color Stability: 2.3 R (5¼" cell) After Two Years: 2.5 R (5¼" cell)

Here's further proof that storage even beyond normal expectancy either on the shelf or in plant inventory, has no measurable ill effects . . . *Case History No. 2-51: A medium sized manufacturer of high-quality esters uncovered a number of bags of Emersol 132 Lily that somehow had escaped inventory rotation. Although the appearance and odor of the material was normal, he sent samples to us for assurance that it still met our high quality standards since his records indicated receipt 2 years ago. Our test results indicated that the Emersol 132 Lily was practically as good as the day it was made.*

This is but one example that illustrates the superior oxidation and color stability of Emersol Stearic Acid. When this is added to their outstanding resistance to rancidity, their excellent color stability, and uniformly high quality, you have an unmatched combination that will make your products better, more appealing, and keep them that way longer. Since Emersol Stearic Acids cost no more than competitive grades, why not order enough for your next regular requirements and see such results yourself.



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*New York; Philadelphia; Lowell, Mass.; Chicago; San Francisco; Cleveland; Ecclestons Chemical Co., Detroit
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Cyanoacetamide

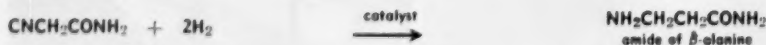
CYANOACETAMIDE (both a nitrile and an amide) is another Kay-Fries intermediate with a cyano-activated methylene group. It is now used in the syntheses of vitamins and barbiturates. Potentially its usefulness can be expanded. It has been suggested as an intermediate for special resins, substituted piperidines and pyridones, new pharmaceuticals and general organic synthesis.

KAY-FRIES SPECIFICATIONS . . .

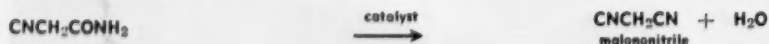
purity	● 99.0% min.
melting point	● 119.0°-122.0°C (meniscus to complete melt)
ash	● .05% max.
solubility	● 1 gm. completely soluble 9 gm. dist.H ₂ O

Typical reactions of CYANOACETAMIDE

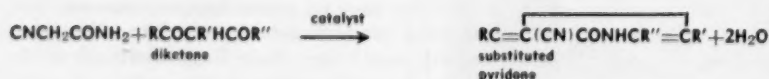
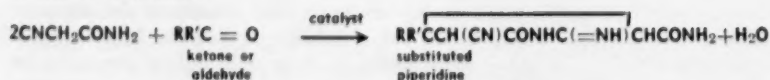
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PRODUCTION

nuclear accident could make it economically impossible to use a facility for many years.

Rules of the Game: What, then, makes a good safety program for the Atomic Age? Simple enough, says Hayes: one that exercises the best possible applications of the known principals of a good safety program. In particular, it should have adequate means of determining the extent of the hazard and have personnel to do the job:

Radiation, as Hayes points out, causes two hazard problems—external and internal. The internal radiation comes from radioactive materials taken in the body. External radiation comes from materials outside the body, penetrates the body and does damage as it moves.

Because of the "new dimension," engineers will have to familiarize themselves with new tools and techniques, such as gas-tight buildings, provision for draining of all spills to remote retention basins, use of strip-pable films and concrete veneers, special ventilating systems, and other provisions designed to make it "easy to pick up the pieces."

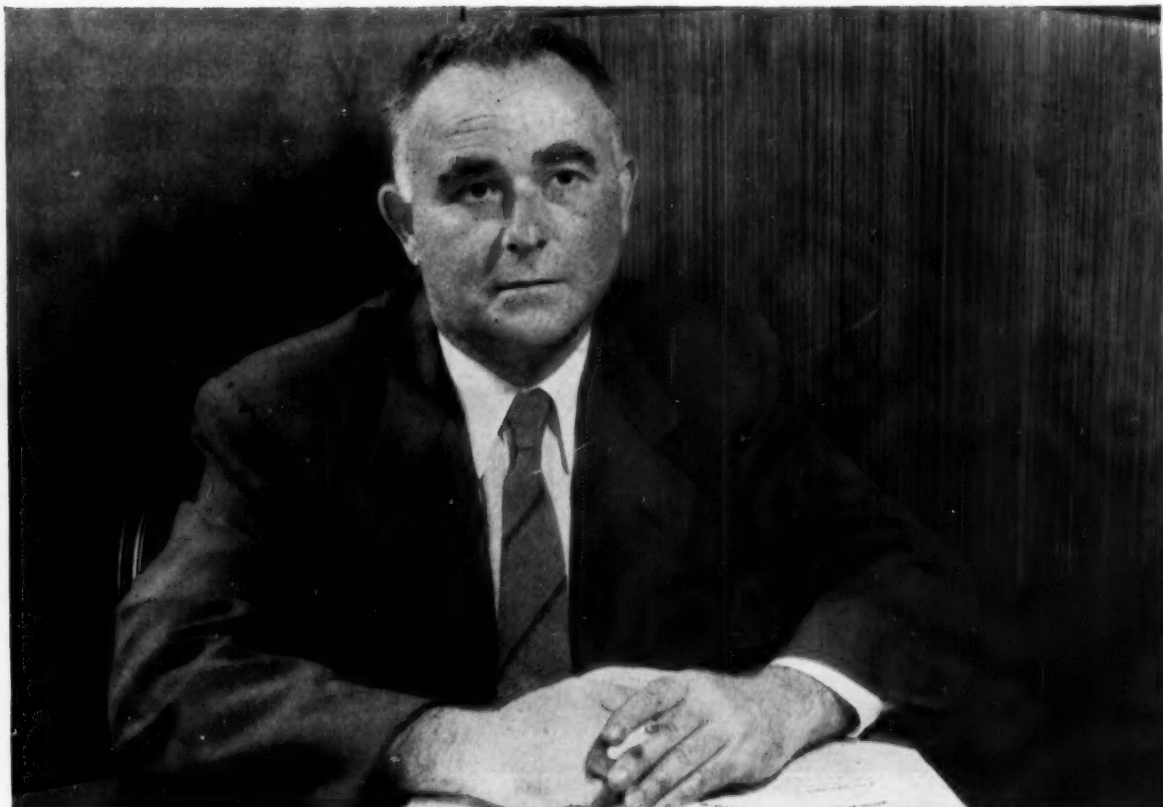
Also, they'll have to develop new and better means of conducting trial runs, remote control and fail-safe devices, as well as other instruments and procedures not normally needed in safety programs for plants dealing with less-hazardous materials.

In short, Hayes feels that the job is to determine the causes of accidents and to eliminate them. When this can't be done, assume that there will be accidents and provide for them.

Obviously, this job of measuring the hazard is not one for amateurs, but for full-time, highly skilled specialists. These, Hayes feels, may well be in short supply. Here's why:

The men who have enough training and education to do the job effectively are the nuclear engineers, physicists, reactor operators and chemical engineers now actively engaged in atomic developments. But they'll be in demand for building, designing and operating new plants. What's needed is a new breed of safety engineers skilled in nuclear reactor technology. Hayes feels that the present safety men would be a good source of manpower.

He also feels that the challenge posed by the atom, as far as safety



Director of Research Fred A. Levin, of The Nestle-LeMur Company, was quick to recognize the unusual benefits of the Pluronics to the cosmetic industry.

"Pluronics definitely have an important place in the cosmetic field"

— The Nestle-LeMur Company, New York, N.Y.

In the manufacture of hair preparations, cosmetics, perfumes, guesswork won't do. You have to be *sure* if you want to protect your good name, and build sales through satisfied users.

The Nestle-LeMur Company knows this through years of experience as makers and distributors of quality cosmetics and hair preparations. In the words of Research Director Fred A. Levin: "We are always receptive to chemical raw materials which will enable us to improve our end products. As soon as the PLURONICS* were announced, we recognized in them a balance of properties which was not available in other nonionic surfactants.

"Consequently, we asked for numerous samples in the PLURONICS series — and thoroughly evaluated those which appeared to have desirable characteristics for our products.

"The low toxicity of all the PLURONICS has been particularly appealing to us. For, in cosmetics, they can be safely applied to the skin. We've found the PLURONICS very effective in our Nestle-Lite bleach. And, for our needs, they are far superior in this preparation than any of the many nonionics previously tried.

"We also use PLURONICS in some of our other well-known products. For example, in our Nestle Color Hair Dye, they serve as an exceptional wetting agent and detergent. It's our policy to continue experiments with the PLURONICS, because no other single product on the market offers their wide range of properties."

How about *your* business? PLURONICS have accounted for substantial savings in many fields: viscose rayon and cellophane, metal cleaning, home-laundry

detergents, boiler descalants, mechanical dishwashing, dye leveling — to name a few. Write, giving details of your expected applications. We will supply pertinent data and proper PLURONICS samples for your evaluation. Wyandotte Chemicals Corporation, Wyandotte, Mich. Offices in principal cities.

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23,896 "Watchdogs"
Every Month...

That's the *average* number of laboratory tests we make each month to insure that every run of every Dicalite product will render uniformly high performance. (The actual number varies, and depends on the different Dicalite products run.)

22 people and 4 laboratories—one in each of the 4 Dicalite processing plants—are needed for this continual quality control. No other mineral, processed into powder form, is so closely controlled as to particle size and surface area. For these are highly important factors in most of Dicalite's many uses, either as filteraid, filler or in other uses.

Hence, the tests continue, lot after lot, recording flow rate, cake density, color, porosity, specific gravity and other characteristics. And our customer's laboratories often back us up with their own tests, giving high reports on Dicalite quality, Dicalite uniformity, and, all-important—Dicalite dependability.

Send for Bulletins—B-12, General Filtration; C-22, Use in Paint, Varnish & Polishes; F-52, Use in Paper & Pulp; F-552, Filtration of Potable Water; Filtration Manual for Dry Cleaning Plants.



DICALITE DIVISION
GREAT LAKES CARBON CORP.
612 S. FLOWER ST.,
LOS ANGELES 17, CALIF.

PRODUCTION

is concerned, will be met and conquered and that in 20 years "we will all take for granted safety achievements regarded as quite impossible today." After all, he concludes, safety is synonymous with good management.

EQUIPMENT

Supercooler: Arthur D. Little, Inc. (Cambridge, Mass.) has developed a new type of refrigeration apparatus that, it says, can produce and maintain temperatures to within a fraction of a degree of absolute zero. The machine uses no moving parts or flowing fluids, operates on a magnetic cooling principle controlled entirely by external magnetic fields.

Slurry Pump: Latest addition to Morris Machine Works' (Baldwinsville, N.Y.) equipment line is the type RX heavy-duty slurry pump. It's designed to handle abrasive slurries of chemical sludges, cement, sand, coal, and plant wastes up to the maximum of fluid consistency under suction lift of positive head. Seven models, ranging from 2- to 6-in. sizes, are available.

Fire Fighter: In a demonstration before petroleum and safety engineers last week, L. G. Dugas (L. G. Dugas Corp., Houston, Tex.) showed off his firm's new dry chemical fire extinguisher. Said to be especially effective against oil and gas fires, the new dry extinguisher is a modification of some of Dugas' older ideas on fire fighting. He claims it will undersell fire-fighting equipment of similar capabilities now on the market.

C W Report

Next Week . . .

Consultant Donald P. checks on synthetic detergents—where they've been, how they stand, and where they're headed. He finds their progress is remarkable, their potential even better. You'll also get a complete - as - we - can - make - it checklist of today's commercial products.

Have you heard the news....?

General Mills Adds Crosby Tall Oil Fatty Acids to its Line of Aliphats

COOPERATIVE ARRANGEMENT OFFERS SPECIALIZED TALL OIL ACIDS WITH NEW ECONOMY, IMPROVED SPECIFICATIONS

To meet the increasing demand for more "tailor-made" chemicals, General Mills has arranged to market *tall oil* fatty acids produced by Crosby Chemical Company. They will be available to you from General Mills . . . as part of a full line of specialized fatty acids.

With increased volume, this cooperative arrangement promises you tall oil acids of unequalled quality at continued lower prices. Here's why.

Crosby boasts the latest large-capacity equipment designed solely to distill tall oil fatty acids. It also has ample stocks and sources of crude tall oil.

General Mills backs up the quality, assuring

the same high standards as in the rest of the Aliphat line and *gives you the security of two supply sources.*

Typical of the new tall oil fatty acids is Aliphat 44-A . . . with improved specifications. Aliphat 44-A offers lighter color, higher iodine value, less unsaponifiables, and lower rosin acids than before.

By combining improved color with lower rosin acids and higher iodine value, Aliphat 44-A has improved immensely its value for alkyd resin manufacture. For example it is also ideally suited for white enamels and for metal surface coatings. For more data on these and other uses, mail the coupon below.

We also offer Polyamide Resins and Fatty Nitrogen Compounds.



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Please send me technical information on General Mills Aliphat 44-A. Our use for the product is: _____

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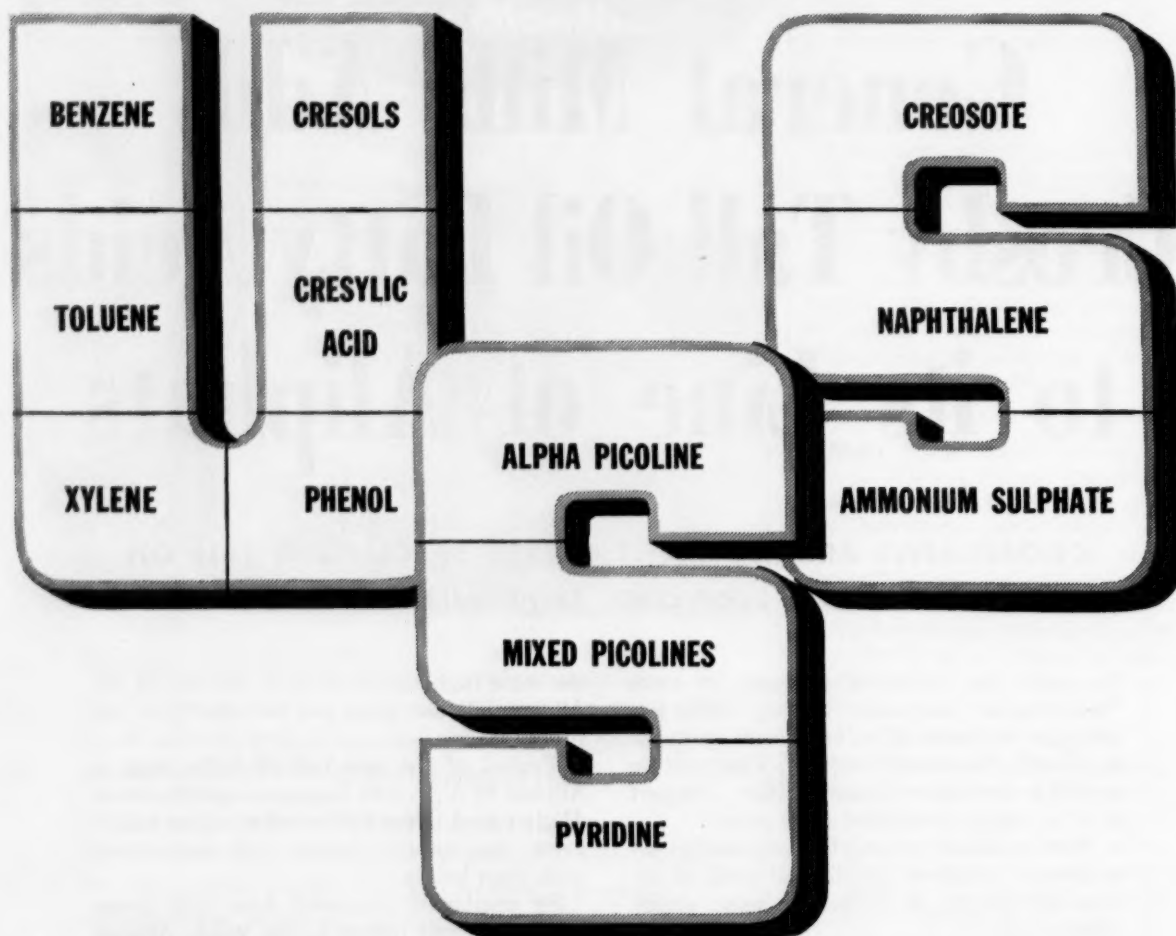
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United States Steel has ten plants producing chemicals. When you order your chemicals from U.S. Steel, you are assured of service and shipment to meet your production needs. For more information, contact our nearest Chemical Sales Office, or the United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

A NEW MOTION PICTURE,
"The Waiting Harvest," tells the complete story of the participation of U.S. Steel in the field of chemicals. It is available on request in 16 or 35 mm film from Film Distribution Center, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

See "THE UNITED STATES STEEL HOUR"—Televised alternate weeks—Consult your newspaper for time and station.

USS Chemicals



UNITED STATES STEEL

Technology

Newsletter

CHEMICAL WEEK
OCT. 15, 1953

Don't be surprised to find Shell dealing itself into systemic insecticides in the not-too-distant future. A paper in last week's *Science* unveils compound 2046, a short-residual systemic investigated by Wisconsin Agricultural Experiment Station's John Casida with the support of a Shell Development research grant.

Shell says it's too early to talk business, but results of field residual studies are whipping up speculation: less than 0.1 ppm. of residue reportedly was detectable four days after treatment of soil and foliage with ¼ lb./acre of the agent (chemically, O,O-dimethyl 2-carbomethoxy-1-methylvinyl phosphate) supplied by Shell.

Also noteworthy: only the *cis* isomer appears to be active.

Casida reports that substituted vinyl phosphates had the shortest residual period of 20 organophosphates tested on carrots, potatoes and cabbages. Shell is investigating other systemics of this family.

You can expect to hear more about "flexible" carbon, a product invented by a European immigrant, William Soltes, during World War II, and recently investigated at some length by Fordham University's Tibor Laszlo (of solar furnace fame), and at the University of Miami.

Soltes can turn the product out as rope, sheet, felt, sieves, screens, blocks or rods. It's said to be made of carbon that can be made active. Just what uses it will find depends on a number of questions as yet unanswered. But Laszlo foresees its use in filters, tower packing, electrodes and other places. Presently, it's being used in conjunction with an insect repellent.

An experiment is under way in California's Santa Cruz County to obtain oil by heating tar-impregnated sandstone in place, gathering and distilling the resulting cracked hydrocarbon vapors. The project is being directed by a group of engineers imported from Sweden, where the method has been successfully used for more than 15 years to get oil from oil shales.

The difference is that in Sweden the availability of cheap hydroelectric power permits the use of electricity for the heating. Presumably, in California, natural gas produced along with the heavier hydrocarbons after the cracking process has started will supply the heat in underground burners.

Present production is on a modest scale. Another year or more of testing will be necessary before production can be scaled up.

Kellogg won't talk about it yet, but it has installed its new sulfuric acid recovery process in a refinery. The process, which has had the sulfuric trade buzzing for quite some time, is a freeze-out one, outlined fairly well in a recent Kellogg patent (U.S. 2,716,592).

A new so-called mental drug has pharmaceutical circles buzzing. Tagged Miltown (2-methyl-2-n-propyl-1,3-propanediol), it's an interneuronal blocking agent that has been evaluated on 200 mental institution patients at Mississippi State Hospital during the past five months.

According to Dr. V. M. Pennington, staff psychiatrist at the Mississippi hospital, Miltown improved patients who were assaultive, noisy, disoriented and hallucinated. A product of Wallace Laboratories (New Brunswick, N.J.), the new drug—in conjunction with other tranquilizers (reserpine and Thorazine)—

Technology Newsletter

(Continued)

states Pennington, has obviated (since early this year) shock treatments at the Mississippi institution.

Improved insulation materials are the goal of a long-range research project launched this week by General Electric. According to Robert Kriebel, chemical development department manager, the study will make a 10-year investigation . . . seeking to unearth opportunities where GE can make major improvements in properties.

Better insulation materials, believes Kriebel, can make possible 20% or higher cost reductions for electric apparatus. An activity of the chemical and metallurgical division, the new study will be headed by GE's James Marsden.

Attention will center on a new Upjohn antibiotic if current clinical tests give positive results. Produced by a *streptomyces* isolated from Philippine soil, the substance is a conjugated polyene (empirical formula: $C_{80}H_{50}O_{10}$) that shows broad-spectrum antifungal activity reportedly similar to that of Squibb's Mystatin.

Christened Filipin, the new antibiotic is said to be somewhat toxic, but its current status is described as "promising" by research management. If the material does prove out, the chances are against its ever becoming a synthetic product; at this point, it appears that "bugs" could produce it more economically than chemical methods.

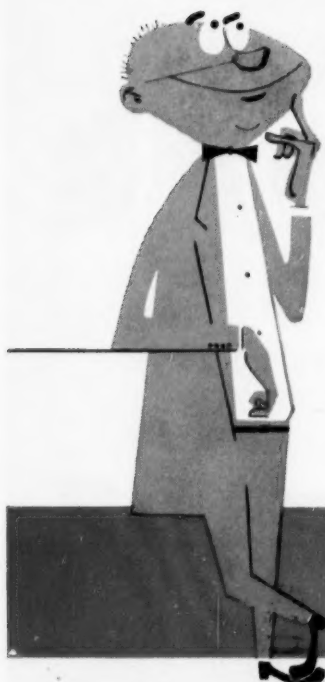
Columbia-Southern Chemical threw its hat in the nonelectrolytic hydrogen peroxide ring this week, decided to commercialize the process that it's been piloting for five years: funds for the plant have been approved, engineering has started, and contracts will be let next fall.

Too, at the dedication of its Norco, Ala., allyl chloride plant (which has been operating since May), Richard McCurdy, Shell Chemical president, revealed that contracts have been let to C. F. Braun for its new nonelectrolytic peroxide plant at Norco; construction will start momentarily with production expected to start early in 1957.

As yet, however, no timetable has been set for Shell's other plants to be built at the same site (acrolein and glycerine), *CW Technology Newsletter*, Oct. 8, *et priori*. Says McCurdy, "Getting the allyl chloride plant up to capacity was like starting your car on a warm summer's day." But that's because of Shell's extensive experience with the process. It knows from experience (e.g., its original synthetic glycerine plant) that starting up a new plant using a new process can be tough. It just isn't willing to try to start up three new plants, all using new processes, simultaneously. So Shell will deal with the three plants separately.

Determination of hazards in running atomic plants has, at most, been only partly explored (see p. 66). But the Canadians, at least, are playing it safe: a rule in the Chalk River atomic plant forbids married couples from working at the plant because of the potential genetic effects of radiation. This was revealed recently by E. W. R. Steacie, president of the National Research Council, who, however, admits that "it's difficult to prevent single people who meet on the job from marrying each other."

BEARING TROUBLES?



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Reliance Motors and
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Automatic Grease Monkey

I found out how to put an end to burned out bearings from the Reliance Metermatic Bulletin, A-2406. Why don't you write for one? A-1499



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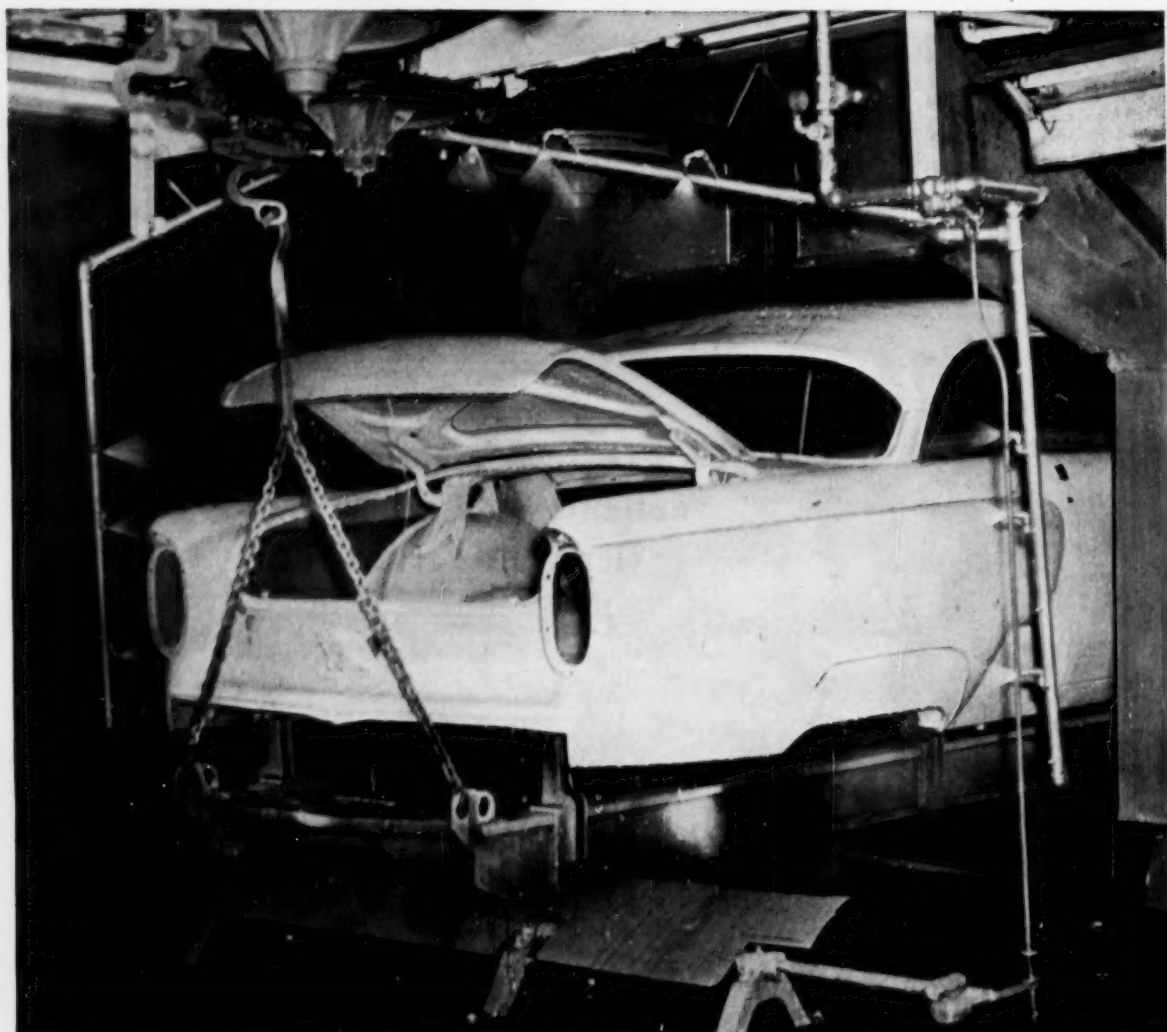


Photo courtesy Lincoln-Mercury Division, Los Angeles

How quality control of water keeps Lincoln-Mercury enamel blister-free

Auto bodies get rinsed with water after phosphatizing and after the prime paint coat. If the water contains too much salt, it leaves deposits that can cause pinhead blisters in the finished paint job. So when paint chemists at Lincoln-Mercury's Los Angeles plant checked and found that the water-work's newest well was "salty," they took action.

They investigated drilling a new well and laying pipe to a better well. But these methods don't provide a permanent solution because the character of a well water often changes (with the level of the water table, etc.).

That's why Lincoln-Mercury decided to remove all mineral salts from their rinse water. To do this at low cost, they chose a Permutit Demineralizer (2 cation exchangers, 2 anion exchangers, 2 decarbonation tanks).

This Permutit Demineralizer keeps water quality uniformly high despite changes in the water supply. It actually delivers water as mineral-free as commercially distilled water. The results: beautiful finishes that stay blister-free.

Unvarying high-grade water may solve your quality-control problem. Let us help you get it at low cost. Write: The Permutit Company, Dept. CW-10, 330 West 42nd St., New York 36, New York.

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RESEARCH



RESEARCH in one part of a company may help another. Capitalizing on these opportunities is the job of . . .

Clearing House for Ideas: Is It for You?

A central technical intelligence agency can save time and money for companies with diverse research interests.

Westinghouse, for example, maintains such a group staffed by five experts in an array of fields.

Their function: consult on problems; guard against duplication of effort; keep alert to opportunities within the company for data and materials developed by any of its divisions.

Those chemical research directors that are eager to seek job pointers even outside the industry will thoughtfully appraise one of Westinghouse Electric's methods of getting top value from its research dollars: a full-time staff of research expeditors known within the company as the liaison engineering activity.

Westinghouse can't pinpoint the dollar savings and profits accruing from the efforts of its liaison group but is convinced that its work is justified. Roughly 45% of the firm's sales dollars are spent for materials, and it's precisely in materials research that the liaison group functions most effectively. As proof of its confidence in the unusual system, Westinghouse has greatly enlarged its scope since the system's inception (coincident with the start of the company's decentralization) in 1936.

Particularly significant to chemical

manufacturers is the fact that some of the Westinghouse team's most effective performance has been with the plastics, synthetic resins, lubricants, protective finishes, and semiconductors that comprise a large part of the approximately 10,000 materials used in the company's 50-odd manufacturing plants.

Sample accomplishments:

- A dry graphite-molysulfide lubricant developed (at the firm's gas turbine division, Kansas City, Mo.) for jet engine compressor blades was found to be just right for use on the adjusting screws of electric iron thermostats made in the appliance division (Mansfield, O.).

- Research leading to simple low-cost corrosion-protective treatment for aluminum lamp bases at the lamp division (Bloomfield, N. J.) paid off twice when the process was applied to aluminum clamping rings in watt-hour

meters built at the meter division (Newark, N. J.)

- The switchgear division's (East Pittsburgh, Pa.) sprayed-on zinc finish for outdoor power capacitors proved out for use on street lighting transformers produced by the lighting division (Cleveland).

- Printed circuitry based on a copper-clad phenolic laminate developed by the electronics division (Baltimore) was readily "sold" to the radio and television division (Metuchen, N. J.).

The five-man liaison corps is headed by chemist-engineer Leo Berberich, whose beat includes electrical insulation (*CW*, Aug. 27, p 43), plastics, varnishes, silicones and lubricants. Other members: Robert Leedy (metallurgy, finishes, general materials and process problems); R. F. Sterling (potting and molding resins, thermal insulation); William Pakala (radiation control, radio and power coordination); and W. L. Roberts (semiconductors, radioactive materials, electronic systems). Each devotes a good part—but not all—of his time to his specialties.†

Armed with diverse and lengthy

† Chemist Berberich is also an electrical engineer, as is Pakala. Sterling is a chemical engineer, Leedy a metallurgist, and Roberts both a physicist and an engineer.

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OF SYNERESIS AND
HYDROLYSIS IN YOUR
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JACQUES WOLF

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*GELLOIDS are thoroughly-refined, purified, standardized extracts of Irish Moss, commonly called Calcium Carrageen Sulphates. Because they are neutral themselves, Gelloids can be applied in a wide pH range. They are available in dry form in a great many modifications of solubility, viscosity, and stabilizing action.

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Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.

RESEARCH

technical experience, the group is an imposing consultation team.

From their base of operations at Westinghouse's East Pittsburgh research laboratories, members travel to the firm's various manufacturing and research arms, listening to problems, trying to find someone or something to help solve them.

In addition to these chores, they prepare surveys on various fast-moving fields (e.g., silicones and semiconductors are two that were done) for the benefit of all interested researchers. This is often accomplished by calling a conference of experts, disseminating the published conference report.

Rounding out the team's duties is the preparation of the "liaison information letter," which transmits a variety of information (e.g., abstracts of company research reports, brief reviews of timely technical literature, etc.) to all divisions of the company.

Reportedly unique in the electrical equipment manufacturing industry, Westinghouse's research liaison group likewise has no parallel among a sizeable number of chemical manufacturers queried by *CW*. There is no guarantee that such a plan would be useful to all firms in the many-faceted chemical industry. But there's good reason to believe it could prove beneficial to some.

Would we profit from an idea clear-
inghouse is a question that each research director must consider on the merits of his firm's special case.

Reprieve in Rubber

For the time being, at least, the chemical industry is in little danger of losing to atomic energy its whopping* rubber-vulcanization market. That's one conclusion to be drawn from newly disclosed results of Goodyear Tire & Rubber's studies of rubber vulcanization by gamma rays.

Carried out by Goodyear researchers S. D. Gehman and I. Auerbach, among others, the investigation suggests:

- Commercial gamma-ray vulcanization must mark time until considerably more progress is made toward economical large-scale production and utilization of fission waste products.

- The method could have a promising future in processing thick articles (where heat transmission is a problem), extruded and preformed shapes (that are distorted by heat of ordinary vulcanization), and relatively inert rubbers not vulcanized by chemicals.

- It probably never will be used in passenger car tire production.

A striking discovery is the magnitude of the radiation dose (1.5×10^7 rep†)—larger than that required for food and drug sterilization—needed for effective vulcanization. Right now, it appears that the only feasible way to secure such giant doses in a relatively short time calls for the use of spent reactor fuel elements.

* It's estimated that over a million tons of rubber will be vulcanized this year in the U. S. alone.

† Roentgen—equivalent-physical.



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TRITON CF-10 can be used with excellent results in the following applications where controlled foam is important:

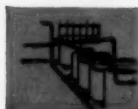


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Many more applications will occur to formulators. TRITON CF-10 is now commercially available. Investigate its possibilities by requesting samples or information from Rohm & Haas representatives, or by writing us.



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RESEARCH

Compensation: But, if high energy requirements limit potential radiation sources, they compensate by opening several interesting new avenues of process research.

It's likely, for example, that the temperature of rubber receiving this radiation jolt in a short period would reach 275-300 F, the range of ordinary vulcanizing temperatures. Possibility: optimum results might be yielded by a combination of radiation and chemicals that could be used at these temperatures.

The heat involved, moreover, should be enough to mold the rubber in the same operation. Vulcanization, point out the Goodyear probers in this context, could be carried out in steel molds of 3/4-in. wall thickness—a barrier that would reduce radiation intensity by a not excessive 50%.

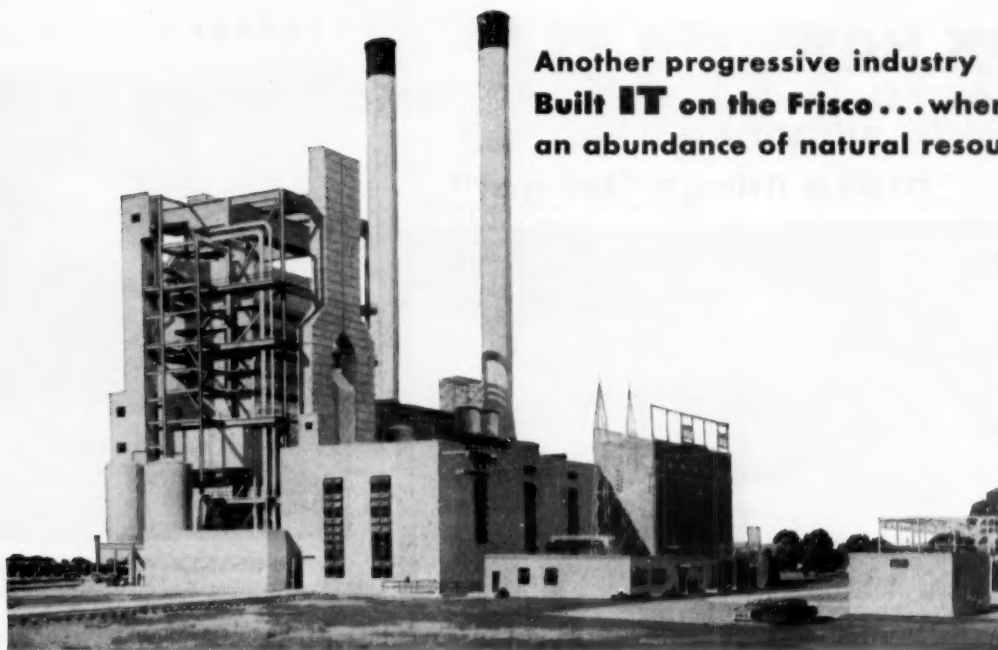
Another possibility is that the required radiation dose can be cut. New types of synthetics, highly susceptible to radiation cross-linking, are logical targets of research. Sensitizers will also come in for study, although conventional catalysts such as organic disulfides and *t*-butyl hydroperoxide have not substantially boosted the process's efficiency in early tests.

Back to the Campus: Data on which the Goodyear conclusions are based were obtained by irradiating samples (at a dose rate of about 200,000 rep/hour) with a cobalt-60 source at the University of Michigan.

Irradiated products possessed a maximum tensile strength of about 1,900 psi.—appreciably lower than the 3,500 psi. attainable with chemical vulcanizing systems. Tensile strengths of about 1,900 are high enough to be useful, assert the investigators, and may be increased by mixing carbon black into the rubber. Tensile strengths in excess of 2,000 psi. were obtained by this method.

Further investigation of the influence of fillers is on the docket.

Even if all upgrading efforts bear fruit, radiation-vulcanization can't hope to take over gainful applications for a long time to come—at least until the new technology governing its use is vastly improved. That's fundamental. In practically every case, cautions the Goodyear team, gamma-ray vulcanization will be in competition with a chemical process that has undergone a hundred years of intensive development.



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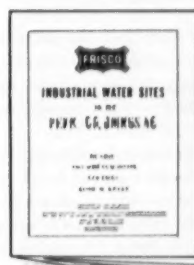
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RESEARCH



GE'S PFUNTNER, WILTERDINK:
For new insulation, arc protection.

Insulation Upgrader

Thanks to chemical research, electrical equipment makers are planning new and profitable high-voltage applications for organic insulators that are traditionally relegated to low-voltage duties.

Behind this activity: a new hush-hush additive, developed at General Electric's instrument department (Lynn, Mass.), that reportedly prevents free-carbon formation, thereby eliminates carbon track (erosion through electrical arcing) in organics.

Already going into a butyl rubber insulation for outdoor instrument transformers, the chemical reportedly permits the elimination of oil-filled metal casings, porcelain bushings and gaskets. Along with the savings in materials and handling possible with the resulting smaller transformers, the improved insulation cuts transformer maintenance, susceptibility to mechanical damage, explosion and fire hazards.

According to GE's Robert Norman, Richard Pfuntner, Albert Kessel, and Bernard Wilterdink, who developed the additive and its use in butyl insulation (called Hy-Bute/60), experiments indicate the newcomer is also effective in phenolics, resins and other materials used in electrical apparatus.

Right now, the only clue to its approximate chemical nature in GE's guarded reference to an "internal oxidation mechanism." But GE has applied for a patent on its find, expects to ultimately license its use.

...AMONG SOME

3500

ORGANICS

Thirty wether lambs...

They took thirty wether lambs of fine wool breeding at Ames, Iowa and fed them various non-protein nitrogen compounds. They were exploring the biochemistry behind the current drive for replacing protein with urea, which is cheaper, in ruminant diets. It has been shown that all ten essential amino acids are synthesized in the rumen when urea supplies all the nitrogen. But no sheepman (or cattleman) dares supply all his nitrogen that way. What makes it dangerous? asked the men of Iowa State.

Simply that ammonia is released into the blood, they found. No harm is done—unless the urea feeding is overdone to a certain critical and fatal point. Likewise ammonium formate, ammonium acetate, and ammonium propionate can release lethal concentrations of NH_3 in the rumen. Not so the amides, for the rumen has little amidase; on propionamide, formamide, or biuret sheep may safely graze, as far as ammonia is concerned. The Iowans therefore looked further at these.

Formamide turned out to have some toxicity problems of its own, but propionamide was fine, gave the same weight gain as urea, and in one trial was equivalent to conventional protein at the replacement level of 30 percent. Propionamide appears to release ammonia at a rate just sufficient for adequate protein synthesis by rumen microorganisms, once they and the lambs get used to it.

One thing is sure. If *Propionamide* ever achieves practical importance for stock feeding it will have to come down in price many times below what it had to fetch as the highly purified Eastman 675 which we shipped to Ames for these experiments. Somebody other than we will doubtless be manufacturing it. If so, it won't be the first time that a compound becomes a big item of commerce from a lead it first gave as an Eastman Organic Chemical.

5-Nitroso-oxine on the spot...

5-Nitroso-8-quinolinol has been tried and found wanting as a chelating reagent for metals. Unnitrosated 8-*Quinolinol*, better known as "oxine" or Eastman 794, has been long known as an effective metal precipitant but notoriously non-specific. The nitrosation succeeds in preventing precipitation of Al, Ga, In, and Mg but also removes the assurance of quantitative precipitation of the commoner metals. You can read all about it in a richly learned but discouraged paper appearing in *The Analyst* for April '55.

Still we do not despair of selling our 5-Nitroso-8-quinolinol (Eastman 7097), for on page 133, Volume II, of Feigl's great "Qualitative Analysis by Spot Tests" (4th edition) it says that if one drop of a 1% solution of this compound in concentrated sulfuric acid is dropped onto a dried drop of alkaline test solution and then gently warmed, the following quantities of phenols reveal themselves by forming indophenols of the following hues:

dark brown: 1 γ phenol
red-violet: 2 γ resorcinol
black: 7 γ pyrogallol
greenish-black: 4 γ pyrocatechol
green-yellow: 5 γ o-nitrophenol
dark brown: 5 γ o-cresol
violet: 5 γ xylenol
dark brown: 10 γ α -naphthol
(1 γ = 1 microgram)

This is typical Feigl analysis—exquisite, low-budget, and compact enough to be worked in a phone booth. We hope everybody buys the book from Elsevier Press, Inc. (2330 Holcombe Blvd., Houston 25, Texas) and the reagents from us.

You pushed me

At last we have seen our way clear to accord *Cellulose Caprate* official sta-

tus as an Eastman Organic Chemical, albeit of only Practical Grade. A short paper in *Stain Technology* this spring to the effect that dissolved 50-50 in xylene, it makes a superior low-index mounting medium for histological specimens, coupled with the fact that the Navy has been using it as an optical cement in all airborne optical instruments for the past seven years has somewhat overcome our diffidence.

Certainly we had no thought of putting on a push for this casual effluent of basic research on cellulose chemistry; we can think of other things that would do our shareowners more good. The push, rather, came from the Navy, which had a hunch that one or the other fatty acid ester of cellulose might melt to a thin liquid below 250 F and still show little or no cold flow at 160 F. If so, and if a good many other if's could be satisfied, it might prove to be a better optical cement than polymerizing resins, which tend to go through a volume change as they set. We had the assortment of esters and the Navy chemists had the perseverance. After a while, the finger fell on *Cellulose Caprate*, painstakingly purified and properly plasticized.

As Eastman P7137 it is apparently good enough for the microscopist but not for the optical shop. At the moment, we prefer to refer the opticians to Naval Research Laboratory Report No. 4242, which describes the Navy's purification procedure in detail. (That report erroneously names a sister division of ours as the supplier of *Cellulose Caprate*.)

Something for the analytical chemist, something for the biochemist, something for any chemist, plucked from among some 3500 organic chemicals we stock. You find them in our List No. 39 and order from *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.

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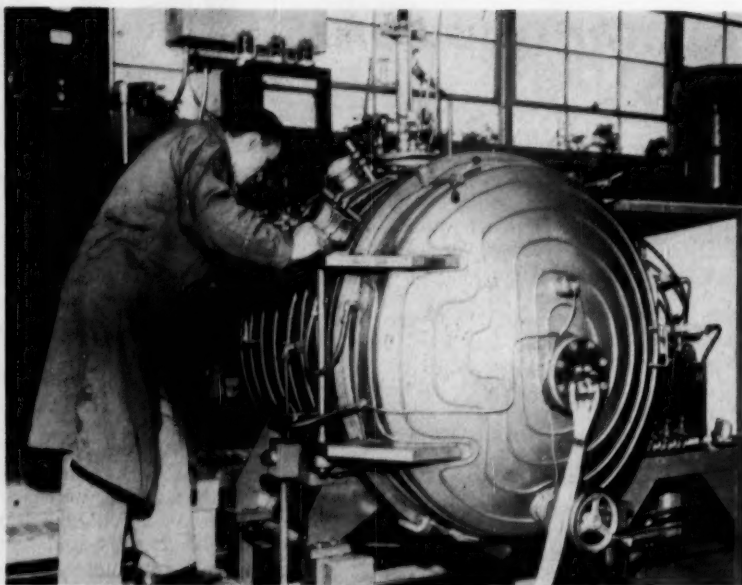
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RESEARCH



AUSTENAL'S VACUUM FURNACE: For investment casting, new scope.

Better Means for the Melt

Vacuum melting—perhaps the biggest single metallurgical boon of the past five years—is bidding fair to bring investment casting* within the limits of its expanding domain. Evidence of this came last week with the start-up, on an experimental basis, of what may well be the first vacuum furnace designed for the investment casting process.

The new equipment is in operation at the Dover, N.J., plant of Austenal Laboratories' Microcast Division.

Austenal believes that vacuum melting will broaden the range of alloys applicable to investment casting, expand the range of small precision parts that can be profitably produced by the process.

This optimism is rooted in the experience of other segments of the metals industries. Vacuum melting virtually eliminates gases and other impurities (e.g., oxides and slags) picked up by metals and alloys in standard melting processes. Result is usually a marked improvement in the mechanical properties of the materials so treated—and that can be highly significant to a process such as in-

vestment casting, which has heretofore been limited to alloys that are not appreciably affected by ordinary contaminants.

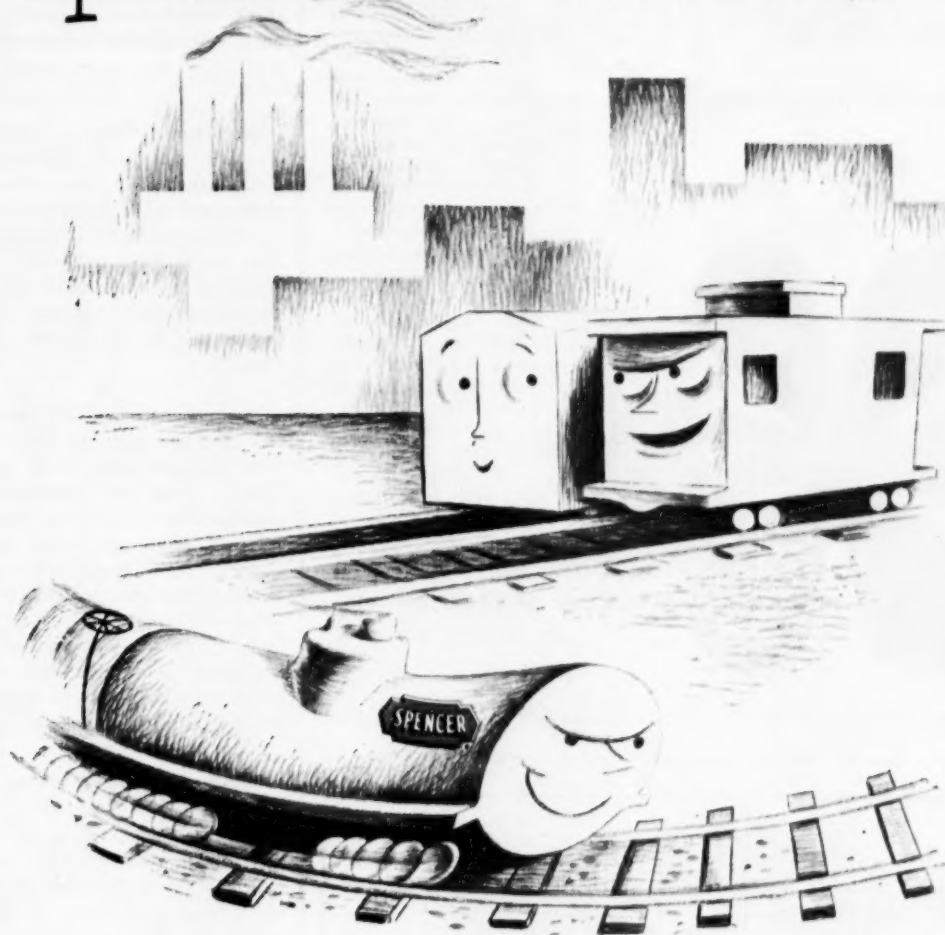
Practiced by a number of companies, the vacuum process reportedly has made possible better tool steels, longer-lasting springs and bearings, finer-drawing wire stocks, and a number of other metallurgical benefits.

Five years ago, 50 lbs. of metal would have constituted a big order for vacuum melting; 1,000-lb. vacuum melts are now becoming common; and engineers reportedly are talking in terms of 10,000-lb. batches. Although applications for the extra-pure products are still limited in size, one automobile manufacturer may introduce vacuum-melted steel valve springs in 1956 models.

Pigment Purifier: A novel method of purifying phthalocyanine pigments is covered in U.S. Pat. 2,716,649 issued to General Aniline & Film Corp.'s Robert Brouillard. Instead of purifying the pigments by the conventional process of dissolving them in concentrated acid (sulfuric, cholorsulfonic, etc.) and then drowning the acid solution in water, GAF mixes the pigment with concentrated acid (68-100%), kneads the mass under high

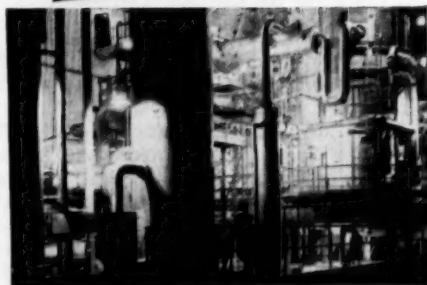
* Also known as lost-wax casting, the method is based on the use of wax to rapidly produce molds for small metal parts. Investment casting is used primarily to mass-produce small precision parts.

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RESEARCH

shear, then drowns the paste. Reduced acid consumption reportedly cuts purification costs substantially.

New Firm: Newly formed Volk Radiochemical Co. (Chicago) will manufacture radioactive carbon, phosphorus and sulfur compounds. Headed by Murray Volk, the organization will also perform special chemical and biological syntheses, offer consultation on radiochemical research problems. Volk was formerly with Nuclear-Chicago.

Analytical Resins: For the analyst, two new products are now available from Bio-Rad Laboratories (Berkeley, Calif.). They are chromatographic alumina (neutral, acid, and basic types in three mesh sizes) and anion exchange resins treated with an indicating dye to change color reversibly in going from the hydroxide to other ionic forms. Bio-Rad prepares analytical-grade anion and cation exchange resins by purification of commercial-grade Dowex resins supplied by Dow.

Building Note: Crown Cork & Seal Co., Inc. (Baltimore, Md.) has revealed its plans for a \$1.5-million research, development and headquarters building at Towson, Md. Fourth major expansion move by the firm within the past year, the laboratory is slated for completion by late '56. Crown will aim for new and improved food and beverage packaging methods and materials.

Defense Research: Just opened at Suffield, Alta., a \$1.5-million defense research station will provide a new site for Canadian chemical, radiological and biological warfare research. G. O. Lanstroth is superintendent of the station.

AEC Contract: Horizons Inc. (Cleveland) was recently awarded a contract by the Atomic Energy commission's Brookhaven Laboratory (Upton, N. Y.) for research and development on electrolytic production of thorium-bismuth alloys. The company garnered the contract on the basis of its experience in making highly pure compounds of thorium, zirconium, titanium, uranium, tantalum, vanadium, columbium, etc., for subsequent use as starting materials in the production of metal.

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Pittsburgh's Plasticizer Research staff

helps the plastics industry solve many of its other production problems. For example, Pittsburgh recently developed PX-114, an outstanding new primary plasticizer. A versatile, low-cost product, Pittsburgh PX-114 enables manufacturers of calendered vinyl sheeting and extruded products like vinyl garden hose to boost production efficiency and reduce costs.

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RESEARCH

Off the Press: The 37th edition of the Handbook of Chemistry and Physics is now available from the Chemical Rubber Co. (Cleveland, O.). Cost: \$12.

Silicone Opportunity: A new use for silicones is taking shape in the work of University of Michigan medical researchers M. Nickerson and C. F. Curry. In rabbit tests, they found that an aerosol of an aqueous silicone emulsion caused rapid subsidence of pulmonary edema (an often fatal complication of a variety of clinical conditions). Inhalation was the mode of administration.

Computer Study: International Business Machines expects its newly planned research and development laboratory in Zurich, Switzerland, to be in operation the first of next year. Object of the new lab, according to IBM Vice-President W. W. McDowell, is to keep abreast of fast-moving data processing advances abroad.

Chemical Comer: HET anhydride is now available in drum lots at 55¢/lb. from Hooker Electrochemical (Niagara Falls, N.Y.). Major use: as a hardener or curing agent for liquid epoxy resins. According to Hooker, HET anhydride contributes fire resistance and high-temperature strength (ASTM heat distortion values reportedly approach 200 C). Likely potential uses: in casting and potting resins, backings for printed circuits, varnish-type insulation coatings for electrical equipment.

Incidental note: the new product is used by Hooker in the manufacture of its Hetron resin.

Shrinkproof: Newly revealed studies by Australia's A. J. Farnsworth at the Gordon Institute of Technology's (Geelong) textile research and testing department have turned up the fact that shrink-resistant wool is obtainable in 2-5 minutes at room temperature by the reaction of wool with sulfuryl chloride and small amounts of an aliphatic alcohol (e.g., ethanol). The last-named greatly increases the rate of reaction, is believed to react with sulfuryl chloride to liberate peptide-chain-hydrolyzing hydrogen chloride. Hydrolysis, combined with cystine oxidation, is the key to the method's effectiveness.



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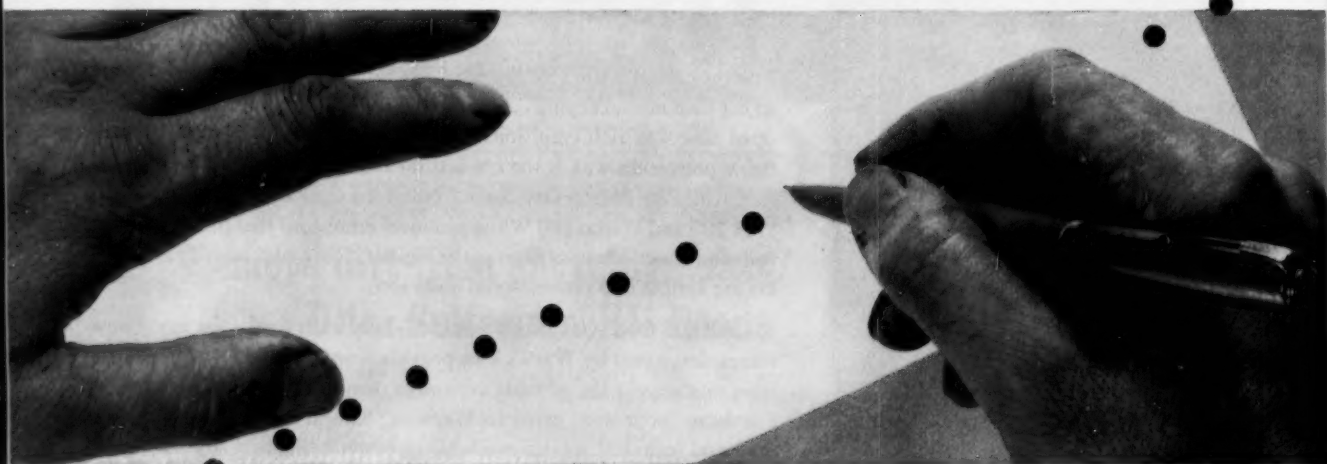
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U. S. ALUMINA

Aluminum-making takes most
of the more than 3 million tons produced. . . .



. . . Here's estimated consumption (long tons) by other
industries - Chemical, Abrasive, Refractory, Ceramic, etc.:

1952—150,000
1953—139,000
1954—149,000
1955—153,000
1956—155,000
1959—170,000

Side Look at Alumina

The aluminum trade, today, is among the more ebullient sectors of the chemical process industries. The metal, played up in the press as it is, gets most attention, but aluminum makers are quietly taking another look at alumina itself—the lightweight metal's essential raw material.

Contributing to the aluminum ferment is the Office of Defense Mobilization's recent decision to withhold aid for primary aluminum expansion. And adding to the stir is the avowal of at least seven present or potential producers to broaden—without government aid—total U.S. aluminum capacity (*CW*, Aug. 13, p. 14).

If all such expansions are carried to fulfillment, this country, within the next few years, will be able to turn

out at least half a million tons/year more aluminum than it did last year, actually boost capacity close to the 2-million-tons/year mark.

And that will call for enough more alumina to add some 33% to today's productive capabilities. In a yet to be published volume (Mineral Facts and Problems), the Bureau of Mines estimates annual capacity at some 3.5 million short tons.

Alumina Line-up: Aluminum Co. of America, with three plants (Mobile, Ala.; East St. Louis, Ill.; Bauxite, Ark.), accounts for 1,606,000 tons of the alumina manufactured in this country. Reynolds Metals runs a close second with 1,095,000 tons from facilities at its Hurricane Creek plant near Little Rock, Ark. (*see cut*), and

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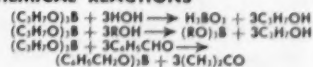
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PROPERTIES

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Density:	20°/4°C — 0.825 gms./ml.

CHEMICAL REACTIONS



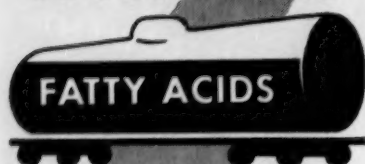
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MARKETS

La Quinta, near Corpus Christi, Tex. Third in the roster is Kaiser Aluminum & Chemical's Baton Rouge, La., installation with a capacity recently increased to about 800,000 tons.

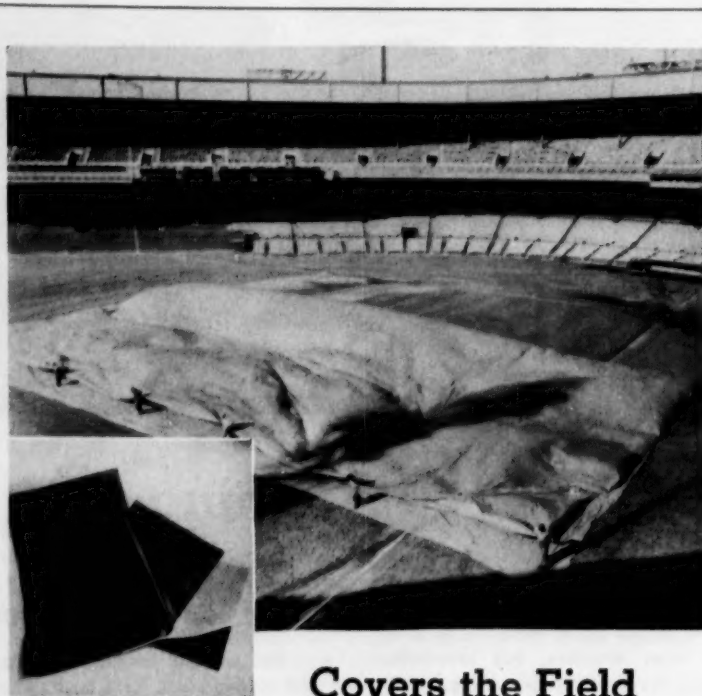
Since the bulk (about 90%) of the alumina manufactured is consumed in aluminum reduction, U.S. alumina capacity will continue to be governed by the metal's output. Usually, too, such capacity is planned to exceed, for reserve purposes, both metal and non-metal requirements. In effect, there's a leap-frog aspect to this alumina-aluminum production picture: first too much alumina; then not enough when aluminum needs expand; then too much again as alumina makers move to increase their capacity.

Alumina increases, paced by alumi-

num demands in the past few years, have been dramatic. By the end of 1950, the three major producers could turn out slightly more than 1,745,000 tons. Expansions alone, in the following three years, totaled 1,755,000.

At the moment, alumina production falls somewhat short of an up-to-the-hilt rate; not all plants are operating at capacity. But in light of the proposed aluminum burgeoning, as well as anticipated increasing demand for chemical, abrasive, refractory, ceramic, and other nonmetal uses, additional alumina facilities are being actively planned.

Reynolds, to date, is the only alumina producer who has not publicly proclaimed a proposed buildup in capacity. But it's obvious from its



Covers the Field

THE WORLD SERIES drew the attention of millions of fans. But to some chemical marketers the games' attraction goes beyond that of merely a sports spectacle—it points up a sizable outlet. Take the matter of rain tarpaulins for the diamond's infield, for example.

Huge moisture-resistant covers, which can be spread over the entire infield in about three minutes, are

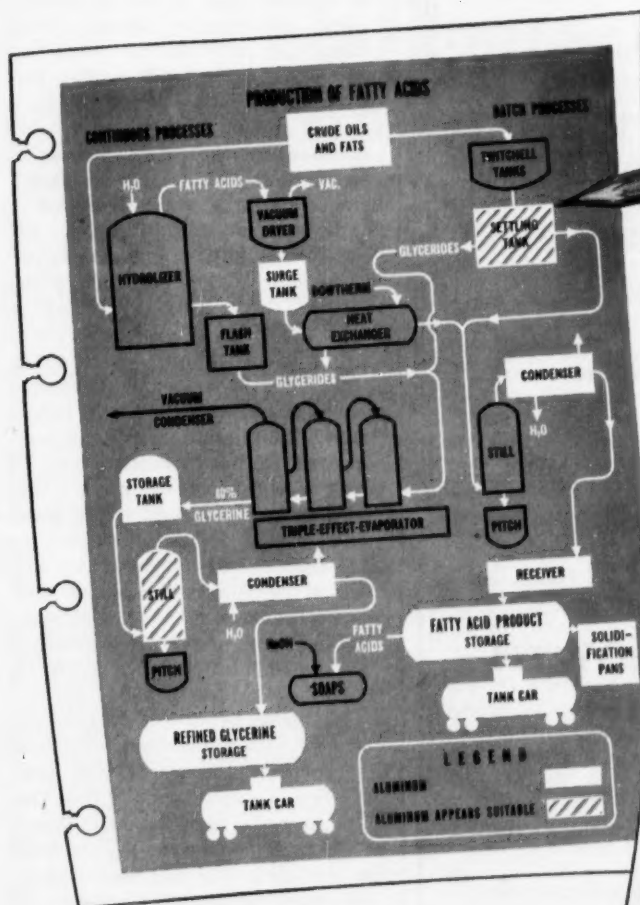
produced by laminating together two sheets of polyvinyl chloride with a layer of nylon sandwiched between for added strength (*inset*). Cost is about 40% less than that of other covers of comparable weight and durability.

The 85 x 165-ft. tarpaulin shown consumed some 5,000 lbs. of Bakelite's Krene, was turned out by Velveray Corp. (New York).

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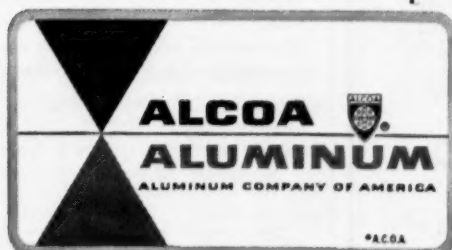
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FATTY ACIDS, ALCOA Aluminum tanks, piping, heat exchangers, shipping drums and tank cars are standard equipment for handling fatty acids. OLEIC ACID, for example, does not attack aluminum even at the boiling point provided a trace of moisture is present. Oleic acid is shipped in aluminum tank cars. FORMIC ACID solutions, when uncontaminated, have no appreciable action on aluminum at room temperature. ACETIC ACID is handled commercially in aluminum stills, condensers, piping, valves, receivers, storage tanks, shipping drums and tank cars. At room temperature, the rate of attack on aluminum by solutions of acetic acid does not exceed 0.001 ipy. Attack in dilute solutions varies directly with temperature. At the boiling point, however, the glacial acid is compatible with aluminum provided a trace of moisture is present.

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MARKETS

announced aluminum expansions and other known commitments* that the company will definitely be short of the essential raw material unless some expansion is made.

For instance, the firm plans to increase its primary aluminum capacity to 550,000 tons in the foreseeable future. Additions to present plants, though, are scheduled for completion next year, will add 50 million lbs./year to its Alabama primary plant, and 20 million lbs. to the Texas installation. In the works, too, is a 100,000 tons/year primary aluminum production plant in the Ohio Valley.

It's not official, of course, but chances are Reynolds will have to put up another alumina plant, and probably in Texas. Reasons for such a move are solid: natural gas supply is handy in the Southwest; there are protected water routes for transportation of necessary bauxite from Jamaica; market for aluminum is still wide open in the West and Southwest.

More and More—If: Alcoa's alumina prospects include a new plant adjacent to its Point Comfort smelter. The addition will cost more than \$35 million, be initially capable of producing perhaps 500,000 tons/year. But to satisfy Alcoa's growing smelter needs, there would probably be a doubling of output by 1965.

But the whole project, as of now, is hog-tied with a qualification. Before the company goes ahead with construction, it wants assurance from the U.S. Army Corps of Engineers that a 30-ft. navigation channel will be built in Matagorda Bay. The ship channel will permit ore carriers to bring South American or Caribbean bauxite directly to Alcoa's plant.

If and when the new installation is built—tentative completion date is early '58—Alcoa will likely ease off producing at its old 328,000-ton East St. Louis installation.

This deduction in U.S. alumina capacity will be far outweighed, of course, by all the more definitely planned new construction by alumina-aluminum makers. And with aluminum metal production assured of its alumina needs, there's little or no chance that other users will be shorted.

Nonmetal Shunting: Alumina, of

*For example, long-term purchase contracts call for supplying some 120,000 tons/year of alumina for Anaconda Copper's 60,000 tons/year primary aluminum plant, now producing at Columbia Falls, Mont.

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of fiber drums, for example, produces a rugged, greaseproof coating ideal for the packaging of oily or greasy materials.

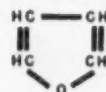
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With ethyl, phenyl or thienyl sodium, furan reacts to form 2-furyl sodium. Reaction with potassium or sodium-potassium alloy gives 2-furyl potassium. Amyl sodium introduces two sodium atoms in the furan ring and subsequent carbonation gives 2,5-furan dicarboxylic acid.

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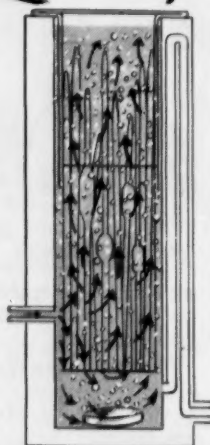
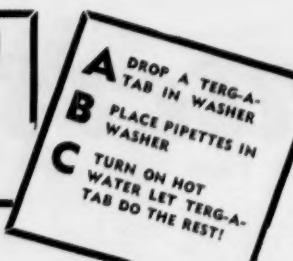
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MARKETS

course, is sold in several forms. The aluminum and abrasives industries chiefly take calcined alumina, which is free from chemically combined water, while the chemical industry leans particularly toward hydrated aluminas, the processed form before calcination. Activated alumina, a partly dehydrated alumina trihydrate, finds use as an adsorbent and catalyst.

A number of aluminum chemical compounds ultimately wind up in clay, glass, and specialty products of the ceramic-cermet trade.

By and large, though, chemicals are the biggest nonmetallic industry alumina consumers. Last year, for example, some 85,000 tons of the alumina produced in this country went to chemical production. Of that amount, synthetic cryolite and aluminum fluoride—used in the reduction of aluminum—took about 30,000 tons. Other compounds made include sodium aluminate, aluminum sulfate, aluminum nitrate, zeolite, and aluminum chloride.

Many petrochemical reactions, too, are dependent on the catalytic action of alumina, or alumina used in combination with other compounds, particularly silica.

Consumption in these and other nonmetal producing industries is expected to continue on an upward trend (see chart). This year's estimated 153,000-ton rate of use, within four years, should grow to 170,000.

The projection is based on several factors:

- An anticipated jump in hydrated alumina consumption as production of petroleum products continue to spiral upward.
- Increasing percentages of alumina being used in silica-alumina cracking catalysts.
- Growing industrial abrasives.
- A trend toward higher-temperature alloys, which means a greater demand for alumina refractories.
- Newer developments in the ceramics field, such as the alumina cutting tool, use of sintered alumina pump components, higher-temperature vacuum tubes, etc.

In the final analysis, however, these outlets are admittedly small-change compared with aluminum metal reduction as an alumina consumer. But they do constitute an important, if less publicized, side of the about-to-explode-again U.S. aluminum industry.



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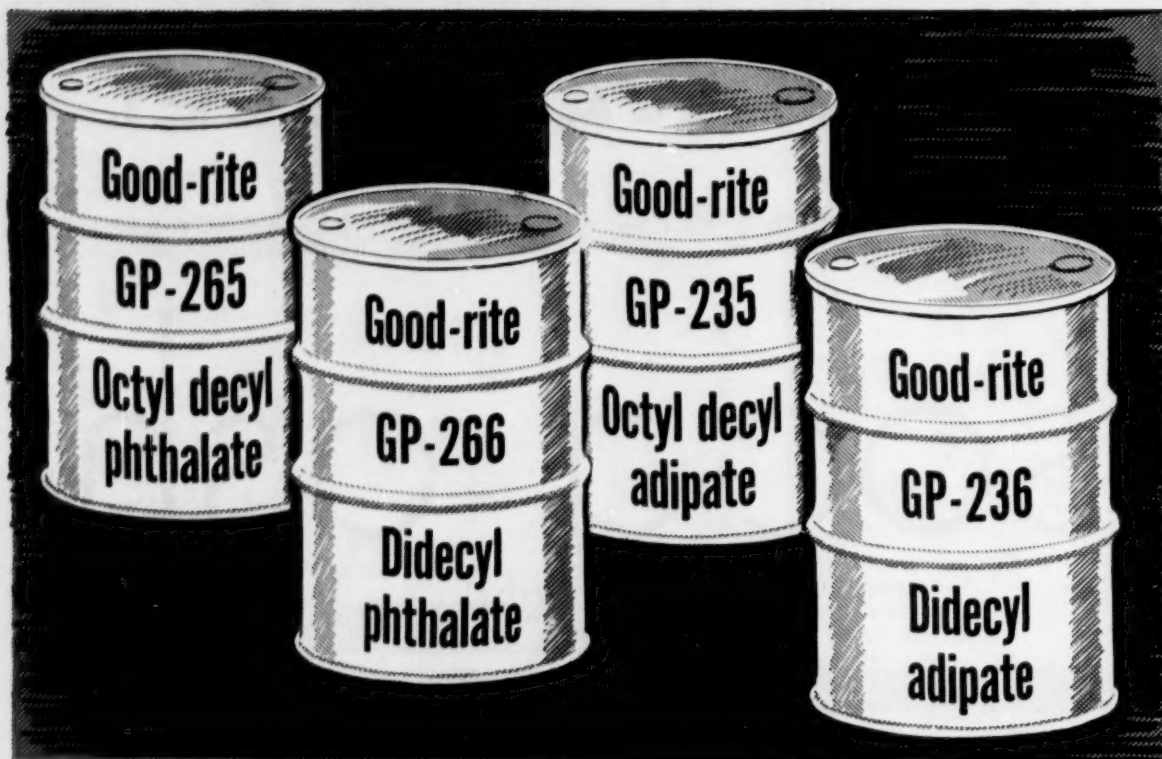
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Market Newsletter

CHEMICAL WEEK

OCT. 15, 1955

Curious about the future? The next five years should hold no qualms, at least not for makers of polyvinyl acetate paints. Sales by 1960 will be hitting a snappy near-50-million-gal./year clip.

That, at any rate, is the rosy-tinted prediction made by Shawinigan Resins' director of marketing, A. William Dunning. The look-ahead occasion: opening, in New York, of the 20th annual Paint Industries Show sponsored by the Federation of Paint and Varnish Production Clubs.

Growing consumer acceptance and increasingly better products with wider application possibilities, are two of the reasons Dunning advanced for the fivefold increase over this year's anticipated 10-million-gal. consumption.

Heartening sales step-up, especially in the acrylic paint field, is behind Rohm & Haas' latest (third within 12 months) reduction in price of its acrylic emulsion binder for water-base paints.

The new cut, 1¢/lb., means that customers east of the Rockies will pay these prices: 20½¢ in tank cars or tank trucks; 22½¢/lb., c.l. in drums; and 23¢, l.c.l. All prices are on a delivered basis.

On the other hand, some chrome pigments will be higher for contract buyers come Nov. 1. Sherwin-Williams, trying to offset boosted raw material costs (e.g., bichromate last month, pig lead last week), will add 1¢ to its prices of CP chrome yellows, molybdate oranges, and zinc yellows.

The new tags (effective immediately on spot sales, incidentally) are, respectively: 33¢/lb.; 46¢; 27¢, east of the Rockies; 1¢/lb. more for delivery to the Pacific Coast.

More barium carbonate is on the way. Sherwin-Williams has just started production at its Coffeyville, Kan., plant, expects to turn out about 7,500 tons/year. (Lithopone, leaded zinc, and zinc sulfate will continue to be produced at the Coffeyville location.)

Part of the barium carbonate will be used captively for barium citrate production, but most will go to oil additive makers, and to glass, brick, and ceramic manufacturing and processing industries.

U.S. soda ash capacity statistics can now be upped officially, too: Dow Chemical has begun producing commercial quantities at its new \$3-million Texas Division plant at Freeport. Rated potential: 300 tons/day.

Output, made via the firm's own process (*CW Technology Newsletter*, Oct. 8), is in granular crystal form, will be available to consumers either in bulk or in 100-lb. bags.

Over-all salt cake supply is going to be somewhat more than enough to satisfy all consumer needs—a market condition only hoped for less than a year ago (*CW*, Dec. 25, '54, p. 55).

Further emphasizing today's antipodal sodium sulfate situation is the 20% increase in production of natural material slated to come from American Potash & Chemical's vast Western preserves. The move is a speedup—sparked by last year's shortage—of the company's long-range expansion and development program.

Actually, trade followers report that output of by-product salt cake, from Mannheim furnaces and viscose production, has been high enough to ade-

Market Newsletter

(Continued)

quately take care of most requirements, with natural, to date, taking up the slack.

Obvious deduction: salt cake supply/demand, seldom in balance for long, is again tipping toward surfeit—at least for a while.

In contrast, nickel chemicals continue to perch on the short end of the market scale. With producers still reserving most of their output for regular customers, little is finding its way to the open counters. And the odd lots that do go fast at premium-rigged resale prices.

For example, nickel sulfate, pegged officially at 30¼¢/lb. (c.l.), at producer levels, is commanding as high as 43¢ for resellers. The same is true on odd lots of chloride at even wider spreads.

The situation is such that few expect producer schedules on the salts to remain where they are—higher price winds are stirring.

Drastically cut, though, are prices on the high-blood-pressure drug, reserpine. The reductions, ranging from \$1 to \$2.50/gram depending on quantity, sets a new \$9.50/gram price for 500 grams or more. (When first made commercially available about two years ago, the material sold, in crystalline form, at \$30/gram.)

Even the new low price may soon be considered high. Reason: many companies are working on a synthetic product. But chances are a market-impact production rate is still a year or two away.

Another major price break is in store for methyl and ethyl acrylate monomer buyers. Cuts (second this year, fourth since '49) bring Rohm & Haas tank car schedules down 4¾¢/lb. to 34¢ on the ethyl, 37¢ on the methyl.

Carbide and Carbon, too, is reducing its ethyl acrylate prices to a like 34¢ level.

There's more ammonium nitrate fertilizer in sight for Western users. Brea Chemicals (subsidiary of Union Oil of California) has already shipped out its first carload of prilled material, will be able to produce some 50,000 tons/year of the nitrate.

Nitric acid production, too, is on the agenda, as are ammonium nitrate solutions of 20% and 40% net nitrogen content. Facilities for the latter should be completed early next year.

The new ammonium nitrate plant is using part of the output from Brea's adjacent ammonia installation, which was put up about a year ago.

SELECTED CHEMICAL MARKET PRICE CHANGES

Week Ending October 10, 1955

UP		
	Change	New Price
Barytes, water-grd., paper bgs., c.l., E. St. Louis, ton	\$3.40	\$45.00
1-phenyl-3-methyl pyrazolone-S, 250-lb. lots, divd., E.	0.10	1.80
Soybean oil, foots (soapstocks), acid, 95%, tanks, N.Y.	0.0025	0.06
DOWN		
Ethyl acrylate, tks., divd.	0.0475	0.34
Methyl acrylate, tks., divd.	0.0475	0.37
Reserpine, cryst., botn., gram	2.00	10.00

All prices per pound unless quantity is stated.

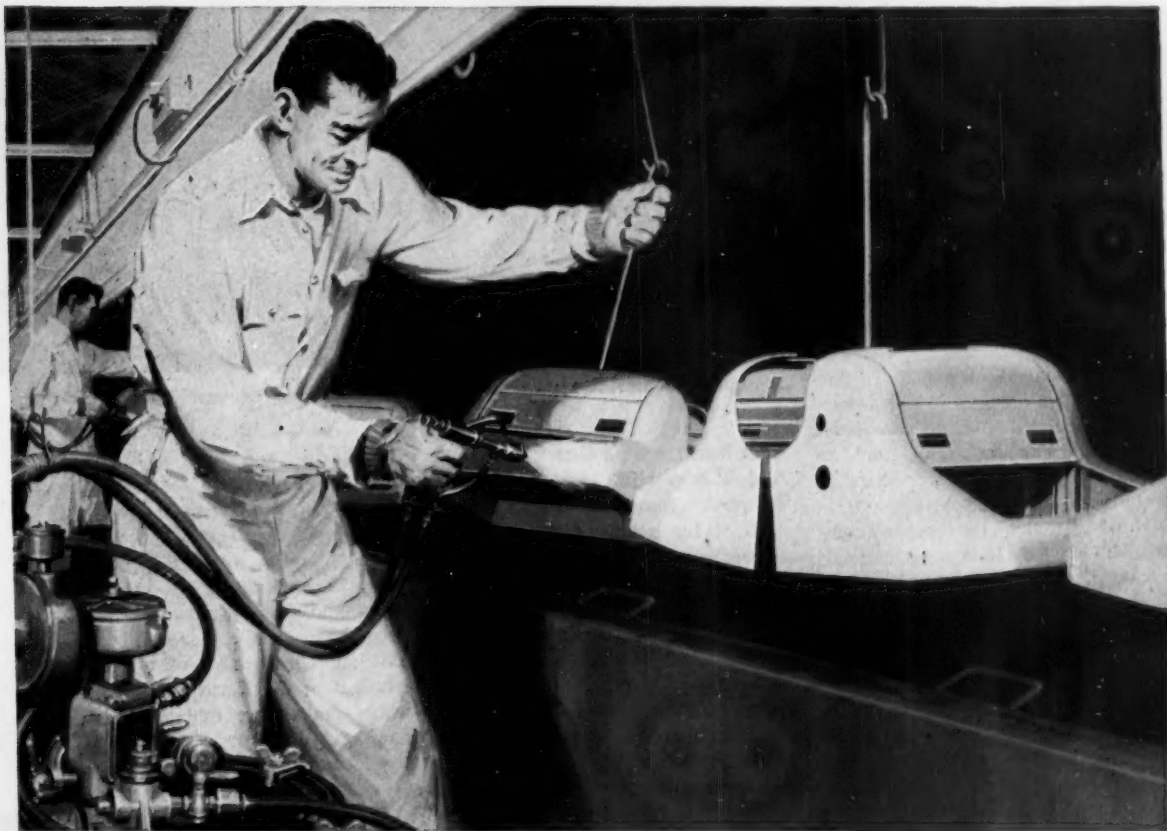
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TOOLS: Tanks for local supply . . .

Terminal By the Sea Makes Sales

After a voyage across wind-swept New York Harbor last week, chemical industry executives and salesmen clambered ashore at the still-building, brand-new distribution terminal of the Celanese Corp. of America at Newark, N. J. Before them lay 11 acres of storage tanks, rail, water and truck chemical transfer facilities—together one of the largest of the few chemical company-operated terminals in existence. More than just a maze of pipes and tanks, the terminal will constitute a prime sales tool in Celanese's bid for a larger share of Eastern solvents market.

How? By making the company competitive in the East on materials produced at its Corpus Christi, Tex., plant. The terminal will turn the trick by utilizing water shipments for a host of chemicals, principal ones including acetone, methanol, n-butanol, formaldehyde, n-propyl acetate, n-butyl acetate, secondary butanol, propylene glycol, 1,3 and 2,3 butylene glycol.

Water freight shipment, one company official estimates, can pare transport costs as much as 80%. And, rail freight rates (effective Oct. 24) between Corpus Christi and Newark for many of Celanese's liquid products run \$2.15/100 lbs., including surcharge and tax.

With such transit savings in hand, the company will draw dead aim on industries that make paint and protective coatings, antifreeze, plastics and resins as well as solvent-consumers. Cost is only one edge of the tool; the other: sales service.

Celanese figures that the terminal's 4-million-gal. liquid and 500-ton solids storage setup will provide adequate inventories for customer needs; that its location places it within an over-



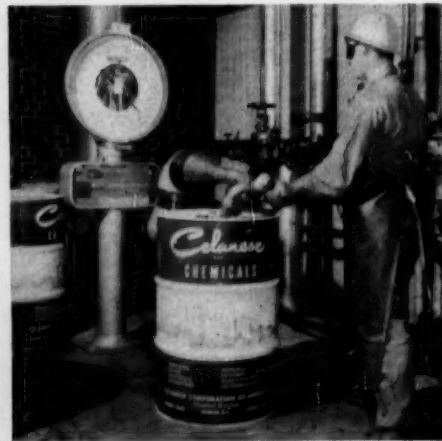
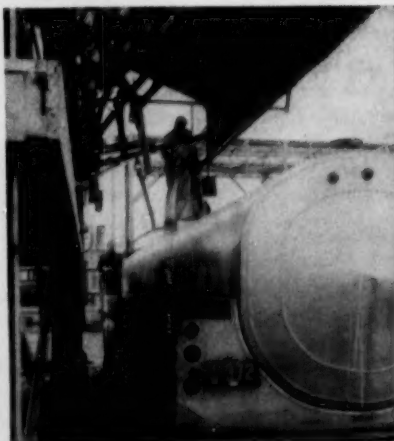
. . . quality control to reduce contamination complaints . . .

night haul from most of its accounts. And a two-shift, 16-hour workday will permit emergency shipments.

To obtain maximum benefit from its move, Celanese has planned its way carefully. A thorough study substantiated cost savings through terminal operations, indicated that company operation would be preferable to leasing space from tank-farm firms. Reason: it must handle a large number of chemicals (now 30, will reach 50), and be able to repackage as needs arise.

Complexity and size of such an operation would be difficult for an outside firm to handle and still maintain service (most tank companies don't offer two-shift deliveries). Newark received the call because of better chemical freighter availability, deep channel and the availability of a location. On the site of a previous terminal of the Texas Co. (some of whose tanks were usable), Celanese now has:

- Storage facilities comprising 27



. . . fast truck loading, repackaging facilities and inventory control . . .

DISTRIBUTION . . .



... yard supervision to get the goods in, get the goods out ...

tanks, 2 warehouses. These are connected by 15 miles of pipe, with tank car, tank truck, boat, and drum-filling areas. Many tanks are reserved for specific materials, have individual lines. There are two 840,000-gal. tanks: one, of aluminum, for formalin; another, of carbon steel, for methanol. Remote controls operate pumping at both pump and tank car, tank truck, and drumming locations. Two tank truck racks make possible filling of four trucks at once. Counterweighted

drops aid filling at truck and tank car locations. And, there's special fire protection—explosion doors, flame arrestors, two foam systems.

- Centralized sample distribution. All requests for samples are filled through Newark.

- Quality control lab. This checks quality of incoming, stored and out-bound shipments.

- Inventory and delivery control. Connected by teletype to all other terminals and order departments of the company, a special office at Newark will oversee inventory and delivery for all terminal (but not plant-customer shipments) operations, will do all billing, invoicing, freight charge calculation. Distribution cost accounting has been assigned to a special group there. And of course, to a certain extent, the terminal will control production. About 25-30% of all Celanese chemicals are shipped through terminals.

Naturally, the firm has laid out the terminal for modern, efficient materials handling. Adding this to the flexibility in order filling, cheaper transport costs, and location, it's plain to see that Celanese has taken a sizable stride towards paring distribution costs, cracking Eastern markets.



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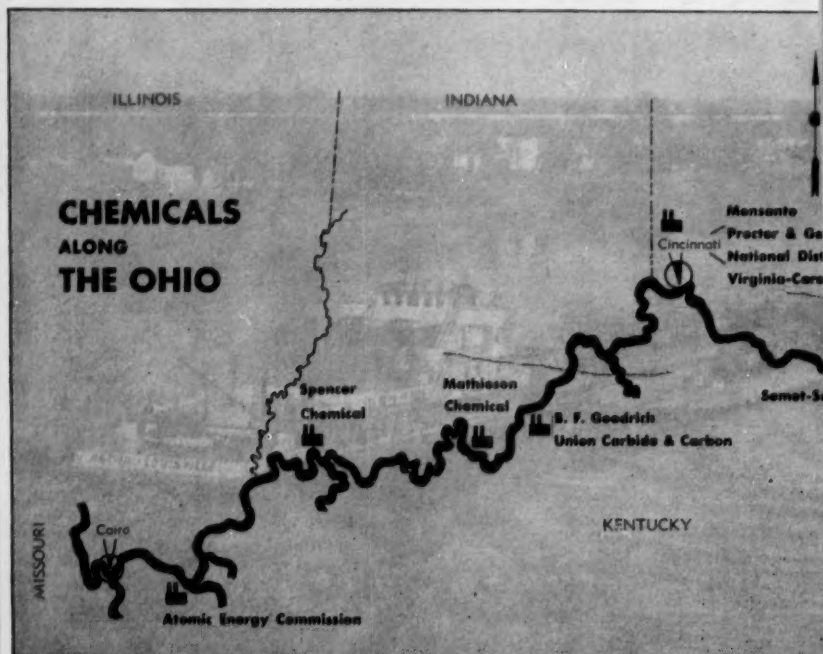
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BARGING ALONG THE OHIO: Chemical firms have located all along the

River Ruckus Stirs Little Interest

Current squabbling about toll rates and improvements along the Ohio isn't producing much official interest from chemical firms located there, a check-up with more than a dozen companies reveals. Unofficially, though, they're keeping their eyes on it.

Center of the dispute is the question of who should pay for the projected \$882,660,000 improvements in flood control and lockage facilities advocated by the U.S. Army Corps of Engineers. A recommendation by the Hoover Commission on Water Resources and Power suggested last June that "Congress authorize a user charge on inland waterways . . . sufficient to cover maintenance and operation, and authorize the Interstate Commerce Commission to fix such charges."

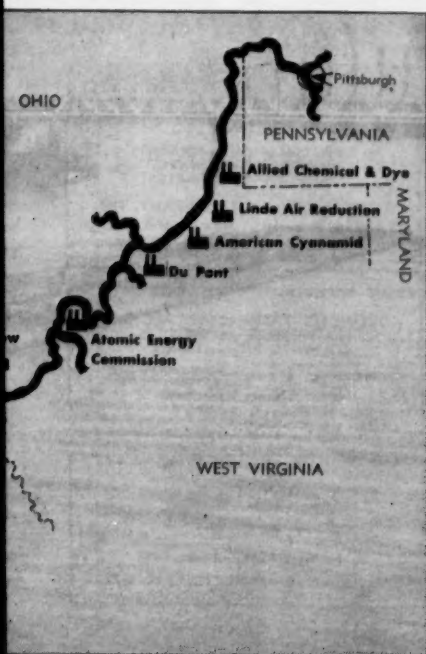
Doesn't Like It: The Ohio Valley Improvement Assn. (Cincinnati) is dead set against the recommendation, terms it open defiance of the historical precedent of free waterways. Says the association Executive Vice-President Hudson Biery, "River transportation . . . has had an influence on the entire valley's economy, and has affected all transportation rates within the area. Let's not disturb the balance of stability."

There is no doubt about the river's influence on the area's economy. At least 26 chemical firms operate 40 plants along the river from Pittsburgh to Cairo, Ill., where it joins the Mississippi. The reasons for migration to the valley: dual transport facilities —by water and rail, good water supply, and close raw material source.

How to Improve: To improve the first two, the Army would replace the 41 wicket dams by building 16 high-level long-pool dams, each having a 1,200-ft. lock and a 600-ft. auxiliary. Result: replace the system of 46 locks and dams with 21 to do the same job, simultaneously raising channel depth from 9 to 12 ft.

So far, Congress has authorized \$16.3 million of the nearly \$1 billion estimate, enough to start work on the jobs considered critical—New Cumberland Locks and Dam near Strattonville, O.; Greenup Locks and Dam, near Greenup, Ky.; and Markland Locks and Dam near Markland, O.

Despite claims by the Army and the improvement association that navigation facilities are in bad shape, chemical firms say these considerations have not weighed heavily in their operations. "Occasionally," says U.S.



900-mile waterway, claim that . . .

Steel's Chemical Sales Division, "shortages in barges and towing vessels cause a storage problem when loads can't be moved." Current solution: most chemical firms plan on long tows, include them in their production schedules.

Increased shortage of equipment is reasonably sure, if growth follows past pattern. Since 1945, 2,500 new industrial plants, including many chemicals, have located along the Ohio, representing an estimated \$10 billion investment. Freight movements have nearly doubled so that chemical movements, until 1952 lumped under "all other" classifications on tonnage charts, are now under a separate heading.

Chemicals account for nearly 7% of the 11.5 billion ton-miles of gross freight movement each year, have shown substantial gains in tonnage. Last year more than 1.6 million tons of chemicals and sulfur were barged on the Ohio, 3% of the gross loading of all waterborne freight.

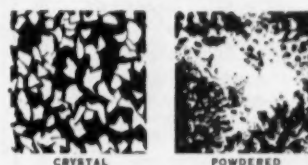
Looking Ahead: Projecting the growth into the future, Col. W. D. Milne, U.S. District Engineer at Louisville, has said that by 1975 the Ohio River system will be grossly inadequate to handle barge traffic or tows. As an example, he points to Lock 41 at Louisville, which last year

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Sworn to and subscribed before me this 15th day of September, 1955.
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(My commission expires March 20, 1956.)

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handled 11 million tons of barged freight, is rapidly nearing 100% theoretical capacity. "Over-all," adds OVIA's Biery, "the system is carrying five times the load for which it was designed."

Actively against "subsidized improvements" are the railroads, which claim that all taxpayers are dunned for improvements, only a few benefit. Rebutters argue the historical precedent of free waterways, the land-grant start of railroads, and the contention that lower freight rates benefit everyone in the long run.

Listening, Waiting: Chemical companies are listening to the arguments, waiting for results. General comment: "We aren't pushing it one way or the other. Any improvements we'll happily take, but for the present we have no problems." From the group standpoint the Manufacturing Chemists' Assn. has taken no stand, is doing no campaigning. Significantly, only a handful of chemical concerns are members of the OVIA.

Shippers and receivers don't worry much about high rail freight rates, are interested in mass movement at lowest cost, basic attribute of river transportation. And, the chemical firms say, inventories are not much affected by the fact that water shipment takes longer than rail.

For the short term, chemical companies don't much care what happens to the current arguments. Long term, they'll wait and see.

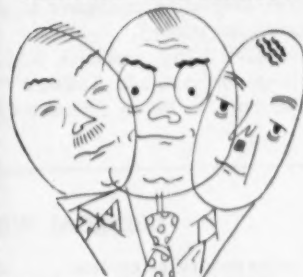
Knowhow for Sales

Chemical salesmen and sales managers will once again have a chance to shore up their knowledge of chemical selling, as the Salesman's Assn. of the American Chemical Industry holds its fourth annual sales clinic. The time: Oct. 24; the scene: New York's Roosevelt Hotel.

Taking the general theme of "Effective Selling of Chemicals," the one-day meeting will have two parts. Subjects at the morning session:

- J. Warren Kinsman, vice-president of Du Pont, "You, the Salesman, and Your Management."
- W. Edward Keegan, sales manager for Shell Chemical, "How to Run a District Office."
- Robert Gopel, manager of sales personnel development, Koppers Co., "How an Ordinary Fellow Becomes

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a Salesman" (he will take a close look at 12 basic points of selling, ranging from motivating customers to correspondence selling).

• Jack Klein, president, Klein Institute for Aptitude Testing, "Were You Born to Be an Effective Chem-

ical Salesman?" Klein will compare his predictions on performance of several men against sealed ratings from employers of the men.

PM and Posers: Panel sessions—with plenty of time allotted for floor discussion, dissension, and questions

—will fill in the afternoon. Running concurrently, three panel sections with prominent industry representatives will weigh topics related to morning talks (training, district office management, and the individual salesman). Included: a session on selling to distributors.

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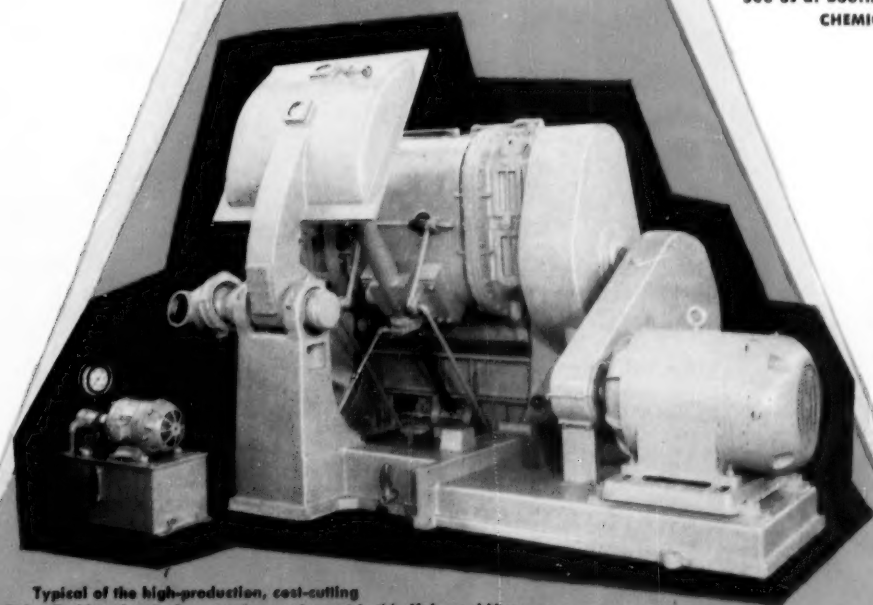
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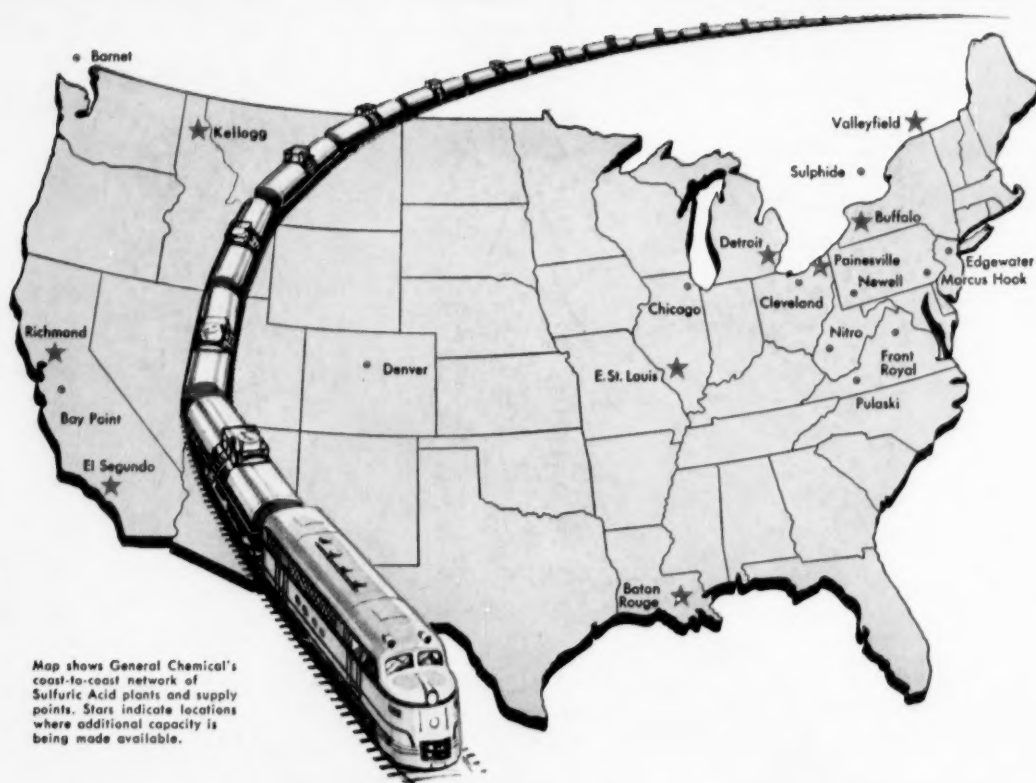
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